

THE WOODED CLIFFS OF THE GORGE

THE RIDDLE OF THE TSANGPO GORGES

BY

CAPTAIN F. KINGDON WARD

Author of "From China to Hkamti Long," "The
Romance of Plant Hunting," etc.

WITH CONTRIBUTIONS BY
THE RIGHT HON. THE EARL CAWDOR

ILLUSTRATED

LONDON
EDWARD ARNOLD & CO.

1926

[*All rights reserved*]

**Made and Printed in Great Britain by
Butler & Tanner Ltd., Frome and London**

DEDICATED TO
F. P. ARMITAGE, ESQ., M.A.,
DIRECTOR OF PUBLIC INSTRUCTION, LEICESTER
AND FORMERLY
SCIENCE MASTER AND HOUSE MASTER,
ST. PAUL'S SCHOOL,
BY
AN OLD HOUSE CAPTAIN

PREFACE

In 1923, through the kindness of the Indian and Tibetan Governments, I obtained permission for myself and one white companion to visit Tibet for the purpose of collecting plants.

Much of Tibet being a semi-desert, the scene selected was the south-east corner where most of the big rivers which rise in Tibet squeeze their way through the mountains to the sea. Of the botany of this region, at the extreme eastern end of the Himalaya, practically nothing was known.

I laid my plans before the Government Grant Committee of the Royal Society, and the Trustees of the Percy Sladen Memorial Fund, and these two bodies financed me. Lord Cawdor, who was then up at Cambridge, and who was interested in Ethnology, and other branches of Natural Science, volunteered to accompany me; and we left England in February, 1924.

It is with great pleasure that I acknowledge the kind assistance of many friends. Personally my first tribute is due to my companion, Lord Cawdor, for his splendid co-operation throughout a trying journey, and I am further indebted to him for two interesting chapters, and for permission to reproduce several of his excellent photographs. Much of the success of the journey was due to his skill, ingenuity and patience.

Major F. M. Bailey, Political Officer, Sikkim, who was instrumental in obtaining for us our passport, gave us most valuable advice and assistance; and to our

friends in Gyantse, Mr. David MacDonald (British Trade Agent), Major J. H. Hyslop, Captain J. E. Cobbett, and Mr. F. Ludlow, we owe many pleasant hours spent on the roof of the world.

F. K. W.

London, 1926.

CONTENTS

| CHAP. | PAGE |
|--|------|
| INTRODUCTION. BY SIR FRANCIS YOUNGHUSBAND, K.C.S.I., K.C.I.E. | xiii |
| I TIBET | 1 |
| II OVER THE HIMALAYA | 13 |
| III TSANGPO, THE MYSTERIOUS RIVER | 30 |
| IV A BOTANICAL RECONNAISSANCE | 42 |
| V THE LAND OF THE BLUE POPPY | 56 |
| VI THE PARADISE OF PRIMULAS | 73 |
| VII IN THE RHODODENDRON FAIRYLAND | 90 |
| VIII PEMAKÖ: THE PROMISED LAND | 109 |
| IX IN THE ASSAM HIMALAYA | 129 |
| X A JOURNEY TO THE LOST LAKE | 146 |
| XI THE CRISIS AT DRUKLA MONASTERY | 163 |
| XII AUTUMN COLOURS | 178 |
| XIII THE GORGE OF THE TSANGPO | 199 |
| XIV IN THE HEART OF THE HIMALAYA | 217 |
| XV THE ' FALLS OF THE BRAHMAPUTRA ' | 232 |
| XVI CHRISTMAS IN TIBET | 251 |
| XVII WINTER ON THE PLATEAU | 266 |
| XVIII THROUGH BHUTAN TO INDIA | 285 |
| XIX THE PEOPLE OF SOUTH-EAST TIBET | 303 |
| XX HOUSE AND HOME IN SOUTH-EAST TIBET | 315 |
| GENERAL INDEX | 325 |
| INDEX OF PLANTS | 327 |

LIST OF ILLUSTRATIONS

| | FACING PAGE |
|---|---------------------|
| The wooded cliffs of the gorge | <i>Frontispiece</i> |
| Gobshi, near Gyantse | 22 |
| Crossing the Tsangpo by coracle, below Tsetang | 30 |
| Tsetang, on the Tsangpo, looking East | 42 |
| Junction of Gyamda river with the Tsangpo at Tseladzong | 42 |
| A Poba or inhabitant of Pome | 50 |
| A Kongfa or inhabitant of Kongbo | 50 |
| Rhododendrons in bloom in the forest, Eastern Tibet | 62 |
| <i>Meconopsis Baileyi</i> | 62 |
| Tumbatse, our base camp for five months | 74 |
| Tibetan Pilgrims | 124 |
| Mönba hunters at Sengchen-Tsangpo Gorge | 124 |
| Entrance to a village in Pome | 151 |
| Pasum lake with Monastery island | 158 |
| Women coolies of Gyala who accompanied us through the gorge | 198 |
| Men coolies of Gyala who accompanied us through the gorge | 198 |
| Gorge of the Tsangpo, below Pemakochung | 204 |
| The rainbow fall, Tsangpo gorge, from 200 feet above | 220 |
| Waterfall above Gompo Ne, Tsangpo Gorge | 244 |
| Travelling Minstrels | 266 |
| Trashigang Dzong, Bhutan | 294 |
| Map | <i>At end</i> |

INTRODUCTION

BY SIR FRANCIS YOUNGHUSBAND,
K.C.S.I., K.C.I.E.

Captain Kingdon Ward is happy in his vocation and happier still in his choice of the field in which to fulfil it. His object in life is to collect plants. And not merely dried plants suitable for the herbarium, and to be described in mechanical fashion in the dead language of Latin, would he collect, but living seeds also—seeds of the most beautiful plants and most suited to our English gardens so that beauty upon beauty might be added to our already lovely land. This is Captain Ward's vocation.

And where in the world could he have chosen a better ground for accomplishing his object than in the Himalaya and in that part of the Himalaya where India touches China, where Indian plants intermingle with the rich flora of China, and where the climate is not so dissimilar to England but what our clever gardeners might be able to make them grow in English and Scottish gardens.

So Captain Kingdon Ward, with his companion Lord Cawdor, go off to that wonderful region where the Tsangpo of Tibet cuts its way clean through the Himalaya and emerges on to the plains of India under the name of Brahmaputra. And here in the mountains and the gorges, both in the full flowering season of the year and in the harvest time of seeds, he revels in ful-

filling his vocation. And the titles alone of the chapters describing his adventures fill us with envy of the opportunities he had made for himself. "The Land of the Blue Poppy"—how we would love to see that land of hope and glory! "The Paradise of Primulas"—what flower lover would not wish that this is the heaven that destiny has in safe reserve for him! "In the Rhododendron Fairyland"—what fairy would ever want a more glorious land in which to disport herself than among the delicate bells of the red and crimson, the mauve and white and yellow rhododendrons of the Indian Himalaya and of the Chinese borderlands.

Let it not be imagined, though, that such joys are come by without toil. No joy worth having ever is. It has to be won. And Captain Kingdon Ward won his at the cost of long journeying over the bleak and wind-swept uplands of Tibet, and afterwards of steep climbs in rain and mist and sleet on the mountain-sides which hemmed in the terrific gorges. It was hard and strenuous work. It was no matter of strolling out and picking a few flowers as the spirit moved him. He had to bear in constant remembrance that the opportunity he had now made he might never be able to make again. He must make the most of it while he had it. In that brief flowering season when plants burst into sudden life and quickly pass away again he must not let a single chance slip by. However disinclined he might be on a day of pouring rain when it is either hot and steamy or chilly with the approach of snow, he must descend to the gorge or climb to the pass. And however exhausted he might be, on his return he must note carefully for each plant the conditions in which he saw it growing so that the gardener at home might reproduce as near as he could these conditions and

give the seeds which Kingdon Ward had subsequently to collect a chance of maturing and the plant of properly thriving.

And then would come the supreme difficulty of adequately describing the plant itself and its flower. How could anyone less than a Reginald Farrer accomplish so delicate a task? Any lover of flowers would be longing for the genius to describe the rare glories which he had seen about him so that those at home might share with him his enjoyment. But how describe the innumerable forms? How describe the different shades of colour? To some extent this may be done by comparison with other natural objects—with the colours of precious stones or of the sky or of fruits, etc. But there is the ever-present difficulty. And we must give the poor plant collector our sympathy as we see him doing all he can to communicate his pleasure to us and we must play our part and go out half way to meet him.

In that mood we must approach this record of a man's effort to enrich the beauty of his native land and give pleasure to his fellows.

THE RIDDLE OF THE TSANGPO GORGES

CHAPTER I

TIBET

I have often observed that no matter how much I read about a foreign land before visiting it, yet I find by experience that it differs widely from what I expected ; it is always fresh, though I had read of it a score of times before.

The reason for this seems to me quite simple. When we visit a foreign land for the first time and see for ourselves its scenery, people, vegetation, towns, arts, customs and all else which goes to make up a country, we are moved by quite different emotions to those aroused by reading about it. Our intelligence now seizes on other objects of our own selection, ignoring many to which our attention was previously drawn. More importance is attached to this aspect, less to that. We form new opinions, prejudices, likes, and dislikes. The selective factor which is now active within us, alters our outlook ; and the two mental pictures, the one derived from our reading, the other from our experience, by no means coincide. The first was in fact objective ; the second is subjective.

In writing this book of travel, therefore, I am fully conscious that a complete presentation of the regions visited is a task beyond my power. All I can strive

to do is to convey an illusion—my own illusion, if you like—which nothing short of a visit to the great gorge of the Tsangpo can dispel for the reader; though I am the less troubled on that account when I reflect that few indeed of those who read these lines will ever visit that remote region.

No general description of Tibet can cover the whole; for the country is so vast that, without dissecting it and labelling each part, such description as we can give must necessarily be vague. Yet to classify and to define were to compile an encyclopædia, or at least a gazetteer, which is no part of art. Such a compilation lacks atmosphere; it gains in accuracy only as it loses in elegance; it is indeed a choice between the quick and the dead. And if I myself would produce a work of art, however rough, I must agree to suppress and to extol, to melt the alloy of base facts judiciously with the pure gold of subjective experience, in order to catch the spirit of the land in which we dwelt, while keeping ever before me our object in making the journey.

For it is this spirit of the land which I wish to convey, a spirit of mystery and spaciousness inherent in the very name of Tibet. But first I must prepare a background on which to paint our picture, a solid background of geographical fact; and therein lies the difficulty. At the very outset it is the vastness and emptiness of Tibet which baffles me. How can I describe it? Even to those who have marched across its bleak plains and climbed its rugged mountains, the difficulty remains.

If one employs a familiar unit of measurement, such as a square mile, the numbers involved are so great that the mind fails to grasp them. Thus to say that Tibet covers a million square miles has no meaning for us. We cannot comfortably conceive a million—it eludes us by reason of its vague bulk. In trying to focus a

million all at once, one resembles an ant looking at a football—most of it is beyond our ken.

If, on the other hand, we employ limited numbers, then the unit of measurement itself becomes so large that we fail to visualize it. We may say indeed that Tibet is seventeen times as large as England and Wales; but we shall be little nearer a real grasp of its size, because of the difficulty we experience in forming a clear conception of the size of Britain. We may evade the difficulty by dealing only with linear measure, and say that Tibet at its greatest length measures 1,500 miles from east to west (the distance from London to Moscow, or from London to Constantinople), and at its widest, 800 miles from north to south (the distance between London and Madrid, or London and Trieste). But here again our conception is out of focus, since we must *march* from London to Moscow before we can compare that distance with the length of Tibet. We must go back to the Crusaders, and visualize Europe in those far-off days; for Tibet is still living in the Middle Ages.

This we may say at least: that the western peninsula of Europe, from Gibraltar to the Rhine, including all Spain and Portugal, France, Switzerland, and Northern Italy, would fit into Tibet quite comfortably and still leave room over for Britain.

So much for one comparison; and Tibet seems huge indeed. Yet Tibet is but a small part of Asia. It is barely as large as India. It could be dumped down in the middle of Australia, and leave a margin of land all round which would include practically the entire population of Australia; while Brazil could swallow it whole.

But the area of Tibet, in whatever terms we express it, conveys no idea of the country itself; indeed, it conveys but an inadequate idea even of its size. For

what of the folded mountain chains which pucker, and the river gorges which score, its tortured surface? Much of the country is twisted and furrowed and corrugated to such an extent that the superficial area must be far greater than what can be measured. We cannot estimate it; we must be satisfied to say that it is so.

And this immense country has a population little larger than that of London to-day or of England during the sixteenth century! The population of the largest cities does not approach that of a modern London borough. True, the population is not equally distributed over the country, any more than it is in Britain. About 250,000 square miles—an area roughly twice the size of Great Britain—is uninhabited and uninhabitable. Imagine Great Britain uninhabited, and imagine a man walking from Land's End to John-o'-Groats and back, and you get some idea of what it means in distance to cross Tibet; the conditions are quite another matter.

Another 250,000 square miles—another couple of Great Britains—is inhabited by the Gipsy population of Tibet, the nomad herds, or Drokpa as they are called; leaving only half the country for settled population.

Even so, and admitting a population of 5,000,000 for the rest of the country, we get on the average 10 persons, or two households, per square mile. Naturally, a good number of square miles have to get along without their human allowance; and in all parts of Tibet—particularly in the gorge country, it is possible, nay easy, and in fact usual, to travel for several days without seeing a house. And yet we are dull enough to tell each other when we meet by chance in Piccadilly that the world is small! It is our own minds which are small.

Not only is there not a single mile of railway in all that vast region; but to east and north at any rate

there is no railway within 500 miles of the Tibetan border. It is only in the south and west that the Indian railways, following the foot of the Himalaya, approach within 150 miles of Tibet. But an idea of their distance from it may be better conveyed by reference to the vertical than to the horizontal; for the loftiest of these railways ends 8,000 feet below the level of the Tibetan Plateau.

Small wonder, then, that Tibet has captured the imagination of mankind. Its peculiar aloofness, its remote unruffled calm, and the mystery shrouding its great rivers and mountains, make an irresistible appeal to the explorer. There are large areas of Tibet where the foot of no white man has ever trod; mountains, lakes, rivers, monasteries, which he has never seen. But above all, in the most inaccessible and sundered corner, are the flowers and forests, so alien to Tibet.

But Tibet is far better known to-day than it was twenty years ago; and though if we were to ask the average educated man to give a short description of Tibet he might reply: 'Tibet is a hilly country with few folk in it, called "lamas,"' yet every intelligent schoolboy has heard of the Tibetan Plateau, possibly even of the Tibetan lakes; and knows too that Everest is in Tibet. Still, every traveller to Tibet has not been to Everest, or even seen it, any more than he has necessarily been to Lhasa. They are not synonymous terms. It is possible to live a year in Europe without either climbing Mont Blanc or visiting Moscow.

Tibet, then, is a 'hilly country,' or more correctly a plateau, elevated from 14,000 to 16,000 feet above sea-level, lower where rivers have scooped out the surface, higher where the crust is buckled into mountain ranges. Four-fifths of the country would answer more or less to that description.

But there are, as it were, two Tibets. There is this plateau country including the lake region, called the Chang Tang, and the upper courses of the great Tibetan rivers, where they flow eastwards or south-eastwards in comparatively wide shallow valleys; and there is the little known and far more formidable gorge country comprising the middle courses of these rivers, where, having dug themselves in, they change direction to the south and force the barrier ranges to flow down to the plains of India and China. It is of this latter region that I shall tell—a country of dim forest and fragrant meadow, of snow-capped mountains and alpine slopes sparkling with flowers, of crawling glaciers and mountain lakes and brawling rivers which crash and roar through the mountain gorges; and, where men dwell, of lonely monasteries plastered like swallows' nests against the cliffs, and of frowning forts perched upon rocky steeples, whence they look down on villages clustered in the cultivated valleys at their feet. Such is the other Tibet, a land unknown to the outside world, yet presently to be known by some of the most wonderful flowers ever brought out of the cold heart of Asia. Small as the river gorge country is, compared with the whole area of Tibet, it nevertheless covers some 200,000 square miles, an area equal to that of France and Switzerland combined; and no country in the world is so deeply rent by rivers, so rugged with great mountain ranges, so bristling with high peaks. But of this 200,000 square miles, no more than a tenth is covered with forest.

Tibet, then, must be visualized as a pear-shaped plateau, hoisted from 14,000 to 16,000 feet above sea-level; the narrow end pointing westwards where it adjoins Kashmir and the Pamirs, the broad end abutting on China. The plateau is furrowed with parallel

east-and-west troughs, separated by ranges of mountains, and is further ringed about with two great ranges of mountains which, diverging from the Pamir node, stretch eastwards, supporting the plateau between them; that to the north being the Kuen Lun, that to the south, the Himalaya.

At its eastern end, the Himalayan range, after sagging down to lower levels, turns north-eastwards and suddenly rises up in the great spire of Namcha Barwa, which is sliced off abruptly on the east side, forming a gable end overlooking the Plain of Assam. Here the Himalayan range appears to end abruptly.

The eastern barrier between Tibet and China is formed by a series of parallel mountain ranges which cut right across those we have described, trending not east and west, but north and south. Beyond them, somewhere in that terrible tangle of mountains which men call the Marches of Tibet, the Himalayan range perhaps emerges, and is continued.

Now if the Himalayan axis were prolonged eastwards without a break towards the Pacific it would sharply separate a rain forest region to the south from a semi-desert region to the north, isolated from the rain-bearing winds which blow up from the Indian Ocean, and watered precariously by the little rain which can find its way over that barrier. But, as we have seen, it is not. But though the moist winds cannot cross the great ranges without being robbed of their moisture, there is still a way through. For note this. Connected with, and separated by the parallel mountain chains just referred to, are several big rivers which, rising in the cold heart of Tibet, set out complacently enough eastwards across Asia. Their sources are hundreds of miles apart and their mouths open on different seas. But all must first escape from the plateau, and all

escape through one narrow gateway, which is a breach in the Himalayan axis—the Achilles' heel in that otherwise impenetrable mountain defence which rings Tibet like a wall. Here they are caught and squeezed between two of the mightiest uplifts in the world. The width of this gap, from the dislocated end of the Himalaya, where the Namcha Barwa gable overlooks Assam, to the eastern foot of the Yunnan Plateau, is some 200 miles.

In the extreme east flows the Yangtze and its three tributaries, which together make up the 'four streams' whence the province of Szechuan derives its name. In the west, right under the eaves of the Himalayan gable, is the Brahmaputra, or Tsangpo as it is called in Tibet. Between the Tsangpo and the Yangtze, but closer to the latter, are three other rivers, the Mekong, Salween, and Irrawaddy. A span of 75 miles covers these last four rivers where they force the mountains.

The consequences of this gap are twofold. It lets out the rivers from Tibet to India and China; it admits the monsoon rains from India into Tibet.

The south-west monsoon blowing overland from the Indian Ocean beats against the southern face of the Great Himalayan Range and drops its burden of moisture. It drenches the slopes which face India, and passing on over the line of high peaks, is quickly wrung dry. Consequently, while the southern slopes of the Himalaya are scored with valleys filled with dense forest, the country behind the fighting line is semi-desert. This is the Plateau of Tibet. It is not the cold, but the long period of drought, the scanty summer rainfall, and above all, the dry wind, which is so hostile to plant life.

But the monsoon, though it cannot cross this obstacle without relieving itself of its burden, is quick to find

the breach ; and striding over the Burma-Assam Plain, towards the narrowing mouth of this funnel, forms a bore, which, pushed on from behind and sucked up from in front, rushes furiously through the river gorges. Thus it drenches the country in the neighbourhood of the breach, and the whole of this comparatively narrow gap is jammed with forest, which spreads out fanwise behind the Himalaya and then quickly disappears. But the most of the rain clings close to the Himalaya, rushing up the Tsangpo ; for the Himalayan Range is lower here with a vast outwork of foothills, till it suddenly rears up in the mighty peak of Namcha Barwa, standing sentinel over the western side of the breach. As you go eastwards, the fury of the monsoon bore abates, until by the time the Mekong is reached, it has already spent itself.

Tibet then, above the 200-mile breach, for a depth from north to south of 100 miles or so, has a very heavy rainfall in summer, and a heavy snowfall in winter. The mountain slopes are covered with dense forest, and above the tree-line, where the snow lies till late in summer, are alps sparkling with flowers for three months in the year.

It would appear at first sight that the easiest way into this country behind the wall of the Himalaya would be through the breach, following the river corridors we have described ; since it might seem easier to pass through a mountain range than to climb over it. But it is not so. The gorges are deep and narrow, filled with forest, and the rivers quite unnavigable. Moreover, the river gorges are separated from one another by knife-edge ranges. Not till we get far to the east, to the Mekong or the Yangtze, beyond reach of the monsoon, is it profitable, or even possible, to pass through the breach up on to the plateau. But then, to reach the

Mekong corridor from the plains, it is first necessary to cross the rain screen and ascend to the Plateau of Yunnan.

No, the easiest way to reach the forest lands behind the Himalaya is to cross the barrier ranges east or west of the river gap—in military language, to turn the gap. Having done this one can approach the corridors where they come down from the dry plateau, before the rivers have dug themselves in.

There is another consideration, and that the most important of all. In the dark wet jungles which clothe the southern slopes of the Himalaya and fill the gorges, there is no transport and no food. Villages are few and far between, there are no bridges over the rivers, and no roads, only rough tracks. There is no transport because there is no grazing; there is no food because there is no cultivation—man cannot grapple with the all-devouring jungle; and there is no population because there is no food. It may easily be imagined, therefore, how difficult travel in such a country, with coolie transport, becomes. North of the rain screen, however, on the dry plateau, there is only thin Conifer forest, or none at all. Here are roads, villages, grazing, ample cultivation, and herds of animals. In Western China, on the Yunnan Plateau, mules are used for pack transport; in Tibet, ponies and yak.

I have on previous occasions, entering China from Burma and travelling north-eastwards over the Yunnan Plateau, turned the river gap to the east, crossed the great rain-screen, and reached the forest from that side. But the way is long and arduous, and the great gorge of the Tsangpo, our ultimate goal, so remote and inaccessible, that never had I reached it, though I had penetrated all the other river gorges in the endeavour.

Not till we crossed the Sikkim Himalaya, thus turning the river gap to the west, then travelling eastwards

across the Tibetan Plateau, were we able to reach the western side of the gap, and see the Tsangpo as it burst round the broken end of the Assam Himalaya.

My story, then, is of this journey, and of adventures amongst forest and meadows into which we descended from the bare wind-swept Plateau of Tibet. Of the plateau, which is Tibet as usually understood, I shall have little to say, though we crossed 300 miles of it to reach our goal; but of the river gorge country, much.

A few words as to our object in making the journey, besides the irresistible lure of geographical discovery. We went to Tibet to collect plants in a region which was an even greater mystery from the botanist's point of view than from the geographer's. We intended to make a collection of dried plants and to collect seed of the most beautiful and suitable garden plants, and so introduce them into Britain, which is the world's temperate garden.

Now a glance at the map will show that the parts of Tibet in which our explorations were conducted lie between the parallels of 28° and 30° , that is, in fairly low latitudes. Compare the latitudes of Cairo, Shanghai, California and Florida. These regions indeed lie outside the tropics, but their floras are sub-tropical, and their climates are noted for mild winters and hot summers.

Very different is Britain, the extreme south of which lies 20° or some 1,400 miles nearer the Pole.

But high altitude in some respects is equivalent to high latitude, and Southern Tibet makes up in altitude what it lacks in latitude; plants from these lofty mountain ranges, if not too close to the Equator, are often, though not necessarily, hardy in Britain, which boasts a wonderful range of climate for so small an area.

The number of foreign plants quite commonly met with in this country, growing out-of-doors all the year round,

would surprise those who have never given the matter a thought. Even plants which we have long since regarded as typically English—for example, the Horse-chestnut, Lilac, Laburnum, Dahlia, and Chrysanthemum, to mention a few—are aliens; and there are literally thousands more.

The climate and soil of Britain, taking it all round, is probably the most suitable in the world for temperate plants; and the temperate flora of the world is considerable. Of the total land surface of the earth, about half falls within the temperate zone, and a large proportion of the plants found there can be successfully grown in Britain. Besides these, a certain number of arctic or sub-arctic plants are hardy with us, and even a certain number which come from mountains within the tropics; since about a third of the tropical land is sufficiently high to possess a temperate climate.

There is no certain guide as to whether a plant will be hardy or not in Britain; trial and error are the ultimate proofs. But experience has shown that plants from moderate latitudes and moderate elevations are hardy, and that those from extreme latitudes and extreme elevations are not. Thus, ruling out the tropics, high or low, and the sub-tropical belt of desert and semi-desert; the Arctic and Antarctic, and their equivalents on very high mountains, we are left with enormous areas of forest, meadow and alpine lands in the Eurasian and American continents.

It is in Tibet, however, that we find not only one of the richest mountain floras in the world, but also the largest unexplored areas; so that we looked forward with the most pleasurable anticipation to the journey, believing as we did that we should make some sensational discoveries. As to whether we did or not, I must leave it to the reader to decide, after he has read the book.

CHAPTER II

OVER THE HIMALAYA

We landed in Calcutta on March 5th, 1924, just as the first heat wave of the year broke over Bengal. The thermometer stood at 90° in the shade, and having no desire to linger in the city of dreadful night longer than was necessary, we pushed on our preparations with all speed.

There are many eleventh-hour things to do, however, before one can start on a long journey into the heart of Asia ; and when on March 9th we felt justified in leaving Calcutta, we still left behind all our stores which had not yet been cleared by the Customs. There was more work to be done in Darjeeling, in any case, so we removed our headquarters thither, feeling that it would be both less demoralizing and less expensive. The train journey from Calcutta to Darjeeling takes only eighteen hours ; we left Calcutta on a red-hot afternoon at 4.30 and awoke early next morning for our first sight of the Himalaya, dim in the haze. A long way behind that mighty barrier lay our ultimate goal.

At 6 o'clock in the morning we changed on to the narrow-gauge railway for the 7,000-foot climb to Darjeeling. Arrived there we made arrangements for mule transport as far as Phari, the first town on the Tibetan Plateau, and engaged a permanent staff of three men, who knew the hills and could speak both Tibetan and Hindustani ; the latter language I can speak sufficiently

well. We soon rechristened our men ; henceforth they were known as Tom, Dick and Sunny Jim. Tom was *sirdar*, that is, general manager, a title much coveted by mule-contractors and other doubtful scalliwags ; his chief, indeed his only fault was a fondness for country liquor. Dick was cook, and when Tom left us a month before we got back to India, he took over the duties of *sirdar* as well, and acquitted himself creditably. He was what is called a good general cook, and take him all round he proved invaluable.

Sunny Jim was man-of-all-work. He did everything ; and he did nothing right, or well. But he was a cheerful idiot, so we gladly put up with his shortcomings.

Two rival mule-contractors who desired our patronage, and who called on us simultaneously in order to secure it, came to blows in the street outside our house one morning. As a result we were able to play them off one against the other, and secure a slight reduction in the high cost of transport to Tibet ; but once we were in Tibet, transport proved comparatively inexpensive.

We expected to be absent from civilization for a year, and as we had no means of knowing what facilities we should find for transport and food supplies in the interior the problem of what to take was no easy one. Tents, bedding and camp equipment with clothes, personal property, scientific instruments and collecting outfit accounted for most of our baggage ; in addition all our money had to be carried in silver rupees. Of course, had we brought with us food for the whole trip, it would have run to many mule loads, and in view of the possible lack of transport and the expense, we could not risk doing this. Everything, therefore, was cut down to the minimum of reasonable comfort ; but there were a number of things, such as oil stoves for our

tents, which afterwards we bitterly regretted not having taken.

As for stores, we made a selection of the more indispensable things, together with a few luxuries for birthdays, festivals, chance meetings and emergencies. The foundation consisted of jam, butter, milk, Mexican chocolate, tea, cocoa, coffee, quaker oats and soup; such things as tinned fish, army rations and bacon were provided in small quantity only. These stores were supplied by Messrs. Fortnum & Mason and packed in six Venesta cases, weighing 60 lb. each. They arrived in first-rate condition, and being pretty evenly spread over the year, with a special supply for the winter, just made the difference to our otherwise monotonous diet of curry and *chappatties*. In Tibet we reckoned on getting *tsamba* (roast barley flour), butter, milk and yak or goat meat; in the event we also got wheat flour, rice, mutton, and occasionally potatoes, peas, or turnips. The food problem therefore solved itself.

On March 14th we left Darjeeling by road for Tista Bridge away down in the tropical valley, 24 miles distant. The first 8 miles we did by motor-car, after which we had to walk and ride. The road, through miles and miles of tea gardens, is picturesque, but monotonous. Arrived at Tista Bridge we found our camp already pitched on the *maidan* outside the village, an evil spot; but the bungalow was occupied.

Next day we walked over to Kalimpong Road station, to collect our heavy kit, which had been sent direct by rail from Calcutta; but found that our stores had not yet arrived.

We moved the rest of our kit over to the camp by bullock cart, and our mules being ready, we started the same afternoon for Kalimpong, where we arrived at dusk during a terrific thunderstorm. Here we were

the guests of Dr. Graham, of the famous Scottish Mission, for a day.

There is a cart-road from railhead to Kalimpong and another to Gangtok, the capital of Sikkim, where the Political Officer lives. Tibetan caravans usually come over the Jelep La and halt at Kalimpong, 4,000 feet above sea-level, as they do not like going down into the hot Tista Valley, where the men sicken; we however wanted to go to Gangtok to see the Political Officer, so we intended to cross into Tibet by the Nathu La, an alternative pass and a better road. It is not so much used by the Tibetans, however, because Gangtok is over 40 miles from railhead, whereas Kalimpong is only ten.

On the 17th, therefore, we said good-bye to Dr. Graham, who had very kindly undertaken to receive our stores and forward them to us at Phari or Gyantse; and descending once more into the Tista Valley, we crossed the Sikkim frontier at Rungpo. Here we had to show our Government passes and sign our names in a book; unauthorized persons are not allowed loose in Sikkim now, because once there, it is not difficult to cross the passes into Tibet unobserved and then everybody gets hot and worried. While at Rungpo bungalow, an unexpected visitor, Mr. G. A. Buchanan, turned up, more to our own satisfaction than his. He had just come down from Gangtok in Bailey's car, which was to pick us up on its way back from the station and take us on to Gangtok. Unfortunately it had broken down and remained immovable for two days, causing Buchanan to miss his train and very nearly his boat.

It is amazing how rumours fly like sparks in India. Buchanan was anxious to send Bailey a wire, telling him what had happened; and we forgathered at the

Rungpo telegraph office to help him concoct a suitable message. As a succinct report which covered all the facts and would not cause the owner to be unduly despondent or alarmed, we evolved : ' Carburettor napu, chassis intact.' But before Bailey received that or something like it, he had already received two wires apparently from irresponsible babus. The first said : ' Car destroyed at 8th mile,' which was calculated to cause both alarm and despondency ; the second said : ' Car smashed, no one hurt,' which at any rate removed all cause for alarm, but left the despondency very much where it was before. Finally, came Buchanan's wire ; and it was no small relief to Bailey when two days later the car itself returned under its own steam so to speak.

Meanwhile we had to ride and walk the 26 miles from Rungpo to Gangtok, most of the way under a blazing sun in the valley, though the last 8 miles through the forest, which also involved a climb of 5,000 feet, was pleasant enough.

We reached the Residency in the evening, and were welcomed by Major and Mrs. Bailey, with whom we spent two delightful days. In 1913 Majors Bailey and Morshead had explored the gorge of the Tsangpo, and it was into the mountains round the knee-bend of that river, where it forces a passage through the Himalaya, that we wished to penetrate. At the beginning we should have to follow much of our predecessors' route, so that Bailey was able to give us valuable information and advice. He also handed to us our passport, which had been specially obtained for us from Lhasa. Thanks to the friendly relations existing between the Indian and Tibetan Governments, and to the influence of Bailey himself with the Dalai Lama, there had been no very great difficulty in obtaining this, though it was of course granted as a favour, the more so as the

Tibetan Government had recently been embarrassed by the antics of certain English travellers. Apart from that we were fortunate in our choice of time, the political horizon being clear ; and especially so in finding Bailey Political Officer in Sikkim. A distinguished Tibetan explorer himself, he is always willing to do anything in his power to assist other travellers, or would-be travellers, whether in the undertaking of an ambitious expedition, like the Mount Everest Expedition, or a private journey like our own.

After seeing the Residency grounds, where Bailey grows a number of interesting plants, many of which he and his wife have themselves collected in Tibet, Sikkim, and Bhutan, and paying a visit to the Maharaja of Sikkim, who speaks excellent English, we finally started for Tibet on the 21st.

For two days we rode our ponies up through the wonderland of the Sikkim forest and saw with our own eyes the glories so vividly described by Hooker in his *Himalayan Journals* ; in 1849 Sikkim was to the world very much what our goal is to-day. Down below we passed by immense trees draped in moss, and supporting huge masses of the white orchid, *Cœlogyne cristata*. Still higher we met with many fine trees of the glorious *Magnolia Campbellii* in full bloom ; looking down on them from above, one saw as it were thousands of white water-lilies, floating on a rough green sea. Then came scarlet bunches of *Rhododendron arboreum* and under the bamboos, drifts of mauve *Primula petiolaris*. We saw this *Primula* from 9,000 to nearly 14,000 feet, and at every thousand feet of ascent it changed in character. As we continued to climb, we noted *Rhododendrons Falconeri, grande, barbatum, Thomsonii, and glaucum*, in that order (most of them were still asleep, their leaves rolled in tubes and pointing stiffly downwards) ; a few

plants of *R. barbatum* were in flower; the scarlet is even more intense than that of *R. arboreum*. It is perhaps worth mentioning that we saw any number of seedling and sapling Rhododendrons by the roadside, as one always does wherever a clearing is made in the forest. Several of them—notably *R. barbatum*—had the under surface of the leaf rich purple, and at an older stage the same species showed a web of hair stretched across, though the mature leaf is bristly, without any continuous coating of wool.

At Changu, 12,600 feet, there is a glacier lake, which was now frozen over, and we spent a cold night at the lonely little bungalow just above the lake. There was hardly a hint of spring here as yet.

On March 23rd we crossed the Nathu La, 14,500 feet, and entered Tibet; but we were still on the southern slopes of the Himalaya. Not till February 14th, 1925, did we recross the Tibetan frontier into Bhutan.

Descending into the Chumbi Valley, we met with better weather and reached Yatung on a bright sunny afternoon the following day. Here we were met by a man sent by Mr. MacDonald, the British Trade Agent, to look after us and escort us to Gyantse. Leaving Yatung, we began the sharp ascent to the Tibetan Plateau. At first the valley of the Ammo Chu was as pleasant as an English May. The steep grass slopes here glowed honey yellow in the lukewarm sunshine, there glimmered with the lilac shadow of *Primula denticulata*, and beyond were dark striped with the rifle-green of pine forest. The barberry bushes shone redly like Chinese lacquer, against the turquoise blue sky, and the silver puss tails of the willows glistened at the tips of half-fledged twigs.

Passing the old Chinese barracks, now destroyed, we entered the Rhododendron-Juniper forest, and bleak

winter shut down on us like night ; conditions changed rapidly and it was not till we reached the Tsangpo, a month later, that we saw any further signs of the approach of spring.

The narrow path now became very rocky and the clumsy mules banged our steel boxes against the cliff till their contents rattled. At Gautsa, where we spent the night, the glen was filled with rocks and Rhododendrons, chiefly *R. Thomsonii*, *R. Wightii* and *R. cinnabarinum*, all fast asleep ; the last-named, however, was looking dejected, as though it had been disturbed before it was time to get up—which it had ; for several bushes had poked their flowers out of the buds, and these had been almost immediately destroyed.

On March 26th we emerged from the glen on to the snow-bound plateau and saw the icy pyramid of sacred Chumolarhi, nearly 24,000 feet high, poking its head up over a near shoulder. For the next three days we marched parallel to the base of this mountain, with superb views of it from several angles.

That afternoon we reached Phari, the first town on the Tibetan Plateau, and the dirtiest and most desolate place imaginable. The *Dzongpön* called on us and stayed till we were quite tired of him ; apparently he did not like us very much, for he promised to take delivery of our stores as soon as they arrived from Kalimpong, and send them straight on to Gyantse, but failed to keep his promise. In fact our stores arrived at Phari next day, soon after we left, and as we made only short stages, they might easily have overtaken us on the second or third day out of Phari ; but we had to wait a week in Gyantse for them.

We were warned to leave Phari early on the 27th, as we had an 18-mile march to Tuna, and the wind blows with great violence across the plateau in the

afternoon. We did not, however, start very early, and after crossing the Tang La (15,000 feet) over the main range of the Himalaya on to the plateau proper, we met the wind in force and did not enjoy the long monotonous ride to Tuna. So level is the plateau here and so clear the atmosphere that we could plainly see the tiny village about 12 miles away, and we wondered why we did not get there sooner; it seemed to get no nearer, though our ponies trotted on mile after mile.

From Tuna to Gyantse is six easy stages, descending very gradually. There are bungalows at every stage, so that however disagreeable the day's march, we were sure of a comfortable night, with a good fire of yak dung and hot soup or tea on arrival. The interpreter kindly sent to our aid by Mr. MacDonald would ride ahead and have everything ready for us, including transport for the next day, when we arrived. We usually walked, as it was too cold to ride; for though by now winter's vicious sting had been withdrawn, the Tibetan Plateau was still very unpleasant; it was all dust and ice and a raving wind which increased in violence throughout the afternoon, to cease suddenly after sunset. Luckily it blew behind us.

How we learnt to hate those endless gravel plains with their thin tufts of herbage and scattered cushions! Everything cowered down behind the stones, or snuggled up tightly to keep out of the ruthless wind. Indeed, crossing the plateau at this season, one might believe that it was a desert, completely devoid of plant life, which only became visible on closer inspection. But during the brief summer, when rain falls for two or three months, and the wind drops, it is astonishing the number of plants which revive. Above 14,000 feet, there are probably over 250 species of flowering plants to be found hereabouts, some of them, such as the prickly

blue poppy (*Meconopsis horridula*), very beautiful. But plants from this sub-arctic region are useless of introduction into Britain; they soon perish in our stuffy atmosphere and damp climate.

Nor were these shrivelled and trembling vegetable carcasses the only indications of life on the plateau; there was actual as well as potential life. On the blue lakes, along whose ice-bound shores we marched for hours, were thousands of birds—bar-headed geese, Brahminy duck, teal, gulls, and others. Tiny pica-hares scampered in and out of their burrows, which in places honeycomb the ground for miles; and we saw also several common hares. Once a herd of ten kyang—the wild ass of Tibet—approached to within a hundred yards of our caravan, and we also saw several graceful gazelle.

In a couple of days we had sufficiently accustomed ourselves to the conditions to enjoy the day's march; but the morning start was always a compromise between our desire not to start before the sun was up and our desire to reach our destination before the wind became unbearable. When the sun shone, it was thoroughly enjoyable. Raw and monotonous as the landscape is, these wide, open empty spaces with the thin keen air rushing over them, and the crude generous colouring of earth and sky, beckon man on and on, to investigate and explore and enjoy.

In ages past, great changes have taken place here, and one can clearly trace the effects of a climate which has been gradually growing drier and drier. Lakes have retreated, or disappeared altogether; glaciers have shrunk back; rivers have dwindled to streams; and out of the material left high and dry by this general desiccation, wind and frost have carved new features.

So we marched over the white clay bottoms of ancient



GOBHI NAER GYANTSE

lake beds and through dry glens worn by rivers which had long ceased to flow and beneath great gravel terraces which marked former water levels, descending gradually, till we came to a long valley; and this we followed for several days, till clumps of trees appeared again, and houses and cultivation and huge flocks of sheep and goats grazing.

Here in a grassy bog, where water oozed and remained unfrozen, what should we find but a tiny rose-eyed *Primula* starring the dun-coloured hummocks, and gazing up at the blue dome of heaven as though summer had come again and it had not a care in the world. *Primula pygmæorum*—of the pygmies—is its name and we often saw pink constellations of this bright little plant during the next fortnight on the plateau.

On April 2nd we reached the wide cultivated plain on which stands the famous city of Gyantse, 13,500 feet above sea-level; and being met by more of the Trade Agent's servants, we were led in state to our quarters at the bungalow.

We now made the acquaintance of the European population, six in number, including Mr. MacDonald, the British Trade Agent; Major Hyslop, the medical officer; Captain Cobbett, in command of the Agency guard, and Mr. F. Ludlow, in charge of the new Tibetan school.

Gyantse stands about half-way between the Indian frontier and Lhasa, being 140 miles distant from the Holy City by road. It is connected with Lhasa and with India by telegraph, and a postal service is maintained with Lhasa by the Tibetan Government, and with Calcutta by the Indian Government; runners carry the mails to Lhasa and mules carry them to India.

We had to wait a week in Gyantse for our stores, but were by no means idle. Apart from an International

Association Football Match between Tibet (represented by Ludlow's School, with such exotic assistance as was afforded by Cawdor, the telegraph babu, and the hospital compounder) and India (represented by Cobbett and his detachment), we played polo during the week (fancy polo at 13,500 feet!), and I found time to make an expedition to a neighbouring glen to examine the flora. This is more extensive and varied than might be supposed. There are plenty of trees, chiefly poplar and willow, along the irrigation channels on the plain; away from this water supply, there are only dwarf bushes of *Sophora viciifolia* and a few other woody plants such as *Potentilla fruticosa*, *Rosa sericea*, Hippophae, Caragana, Berberis, and Clematis. But away up in the narrow glens which scar the faces of the low rounded hills are many plants such as Meconopsis, Incarvillea, Gentiana, Aconitum, Didissandra and other alpines; while Irises and a coloured 'Sikkimensis' Primula (*P. Waltonii*) fringe the ditches below, flowering in the summer when the whole plain is green with crops.

I need not describe the town of Gyantse, as it has been done several times before; but we visited the Tibetan trade agent and the bazaar, and the temple, and paid a visit to the great fort, or *dzong*, which was captured by a handful of resolute Gurkhas, led by a young British Officer, when the British Mission was besieged at Gyantse in 1904.

And then on April 11th, our stores having arrived, we resumed our journey, still following the main road to Lhasa; our friends came to see us off, and it was over ten months before we saw another white man.

Two long marches up a very desolate valley brought us to the foot of the Trans-Himalayan, or so-called Ladak Range, which we crossed on April 13th by the Karo La, a pass 16,200 feet high. There are no more

comfortable bungalows after Gyantse, and our quarters were generally dark hovels, filled with the acrid smoke of a yak-dung fire, and grimy with generations of dirt, accumulated as a protection against the cold. Dour as was the climate, however, we often heard larks singing overhead, and saw rock pigeons, magpies, crows and even hoopoes; partridges too were common, and occasionally we caught sight of wild sheep or bharal, as it is called in India.

Descending from the icy passes, we came down to the beautiful Yamdrok Lake, a jig-saw puzzle of sapphire water and honey-coloured rock. At this point we left the Lhasa road and bore due eastwards, skirting the very irregular southern shore of the lake.

We were now off the map. As a matter of fact the southern shore of the lake had been surveyed by Captain H. R. Meade in the previous year during a journey he had made through Bhutan and Tibet with Major Bailey; but Meade's map had not yet been published.

All this region is very barren, which is not surprising when it is remembered that the lake itself is 14,350 feet above sea-level, while the surrounding mountains rise considerably higher.

For three days we marched along the southern shores of the lake, up hill and down dale, with gorgeous views of the sparkling water and the clouds frothing over the snow-crested mountains beyond.

There was a certain amount of stunted Juniper on the slopes here and we saw plenty of duck and numerous gazelle. All the wild animals in Tibet, birds as well as beasts, are ridiculously tame, since no one ever molests them. To equalize matters all the tame animals, such as dogs, ponies, and oxen, are wild.

In every sheltered bay nestled a village, guarded by a fort crowning the hill above. Here and there we saw

a monastery. Travelling was still unpleasant, because of the bitter wind, and the frequent storms of rain and snow; and in this more populated country we had to change our transport several times each day, which delayed and irritated us.

The Yamdrok Lake has withdrawn many of its advanced arms, so that we marched over dry clay bottoms, which in summer are green with grass, though now they formed a hard bare crust. At one stage we rode along the shore of another lake which has been cut off altogether from the main body of the Yamdrok and isolated. It was snowing and the waves washed mournfully up against the gravel beach. Crossing a ridge, we came down to the big lake again.

On April 17th we reached a village at the south-east corner of the Yamdrok Tso, where a stream flows in through a wide grassy valley. There was more vegetation here than one would ever have expected; grazing for thousands of stock, and on the low hills, crouching juniper bushes, dotted amongst the pale stones like currants in a cake. Hundreds of fat hares lolloped from rock to rock, and herds of yak, sheep and goats nibbled at the brown herbage.

We did a long march up this valley on the 18th past several villages, into a bleak rolling country of cheerless bogs. It was dark and snowing when at last we reached Tratsa, a stone village clapped against the side of a stonier hill; our draughty room was filled with the sullen heat and acid smoke of smouldering yak dung, and a film of fine ash covered everything. Looking out after supper we saw the moon shining wanly over a wild and desolate scene, which held out no good prospects for the morrow. However, we started for the pass in fine weather, but long before we reached the summit, called Shamda La, it was snowing hard. Our

mixed transport of yak, donkeys, and bullocks advanced slowly in mass formation, the ponies skirmishing round the flanks and keeping them together; the ground was very rough, and it took us several hours to reach the top, where we lost our way in the deep snow. But in the afternoon it cleared up and we descended into a stony cultivated valley which looked to us well wooded, though there were really only a few clumps of trees, including a colony of magnificent old poplars just outside a monastery. At this place, called Chongyechen, we stayed the night and awoke next morning to a short-lived paradise. For two hours we marched down the valley where sparkling streams flowed through green pastures, and birds sang in groves of budding trees; whitewashed houses loomed through a pink mist of almond blossom, and in the fields which floored the wide valley piebald yak pulled wooden ploughs.

‘If this is the real Tibet,’ I thought, ‘what a maligned country it is! Could anything be more charming and peaceful, more full of spring grace and freshness!’

Alas! It was but a dream! As we descended, valley and hills grew more and more barren. The streams, sick of trying to keep open a way through the wilderness of gravel belched from the bare hills, sought refuge underground. Cultivation ceased, trees disappeared, and once more plateau conditions were re-established; though as we were still over 12,000 feet above sea-level that was not altogether surprising.

Turning the corner of a rocky spur, a great white city came suddenly into view, or so it appeared. It was the monastery of Riudechen, whose villa residences stretched, terrace on terrace, up the hillside; high aloft, crowning the crag, stood a fine old fort, like a Spanish galleon, called Chongyeshö. A stone pillar, with Chinese characters carved on it, stood out in the middle

of the gravel plain, and beyond was a Chinese arched stone bridge spanning the river which, however, no longer reached the surface.

After that the valley opened out more and more widely and at the little monastery and village of Chongmoche, where Chortens clustered like Burmese pagodas, trees and cultivation reappeared. Hedges of fragrant *Buddleia* were in bloom—this species often forms small gnarled trees about the size of a hawthorn, and in places were clumps of *Ulmus pumila*, which is by no means a dwarf. At the lower end of the valley, where it opens into the wide Tsangpo Valley, the stream reappeared at the surface and once more we reached green fields; the trees too—willows and poplars, were flushed with green, their varnished yellow and red twigs making a bright display. Beneath them, pale Irises were in flower.

It was the evening of April 21st when we reached Netong Dzong, a large village at the mouth of the valley. Here we called on the *Dzongpön*, a friendly capable person in a purple gown and horn-rimmed spectacles, who sent the yak drivers hopping when they grumbled at having to go as far as Tsetang; though customary, it would have been foolish to change transport at Netong, which is barely a mile from Tsetang.

So on we went, and turning the corner, saw Tsetang, with its rows of chortens, its monasteries, and houses spread out on a wide terrace above the Tsangpo, with the bare hills all round and clumps of trees in the foreground; though these were quite lost in the immensity of the dead valley.

Atta Ulla Khan, a Ladaki merchant trading in Tsetang, found poor quarters for us in the dirty town where we decided to halt for a day, and look round; for we had now almost left the plateau behind us (though the Tsangpo is flowing at an altitude of 11,500 feet),

and were entering upon the second of the three plant regions into which we may divide Tibet.

The characteristic flora of the plateau has been referred to. Ordinarily there are no woody plants whatever, but there are plenty of alpine flowers belonging to the genera *Androsace*, *Primula*, *Meconopsis*, *Aconitum*, *Ephedra*, *Campanula*, etc. Trees and shrubs are found only under exceptional circumstances, and then there is very little variety. Drought is the deciding factor—there is a small summer rainfall, but most of the year the soil is too cold for the roots to function. Next to drought comes wind as a factor; and after that possibly the amount of salt in the soil.

We were now entering regions with a more temperate climate; and though at this altitude the wind still blows, especially in winter, as we travelled eastwards, where the summer rainfall is much heavier, we gradually got into forest country.

The temperate forest region is approached through a country with few trees, but fairly rich in shrubs, with many flowering herbs. Of this I shall speak in the next chapter.

While at Tsetang I picked up by the roadside some sprigs of an aromatic-leaved *Rhododendron*, the first I had seen since we left the Chumbi Valley. I was told that the plant grew two or three days' journey distant, and bundles of it were brought in to supply the city censers. Juniper is used for the same purpose, namely the creation of the densest smoke and most pungent smell with the least possible fire.

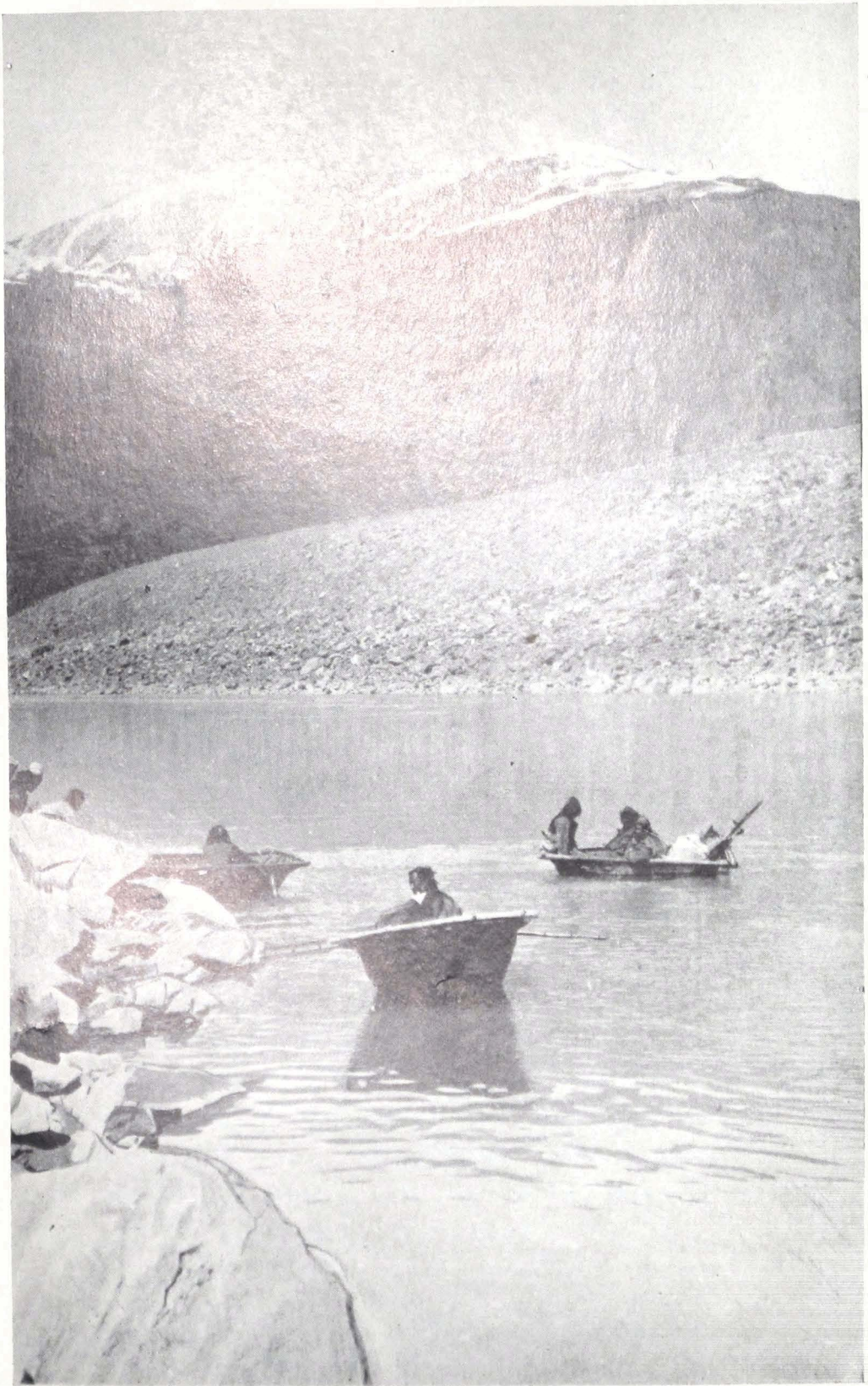
Tsetang is situated on the right bank of the Tsangpo, at an altitude of 11,850 feet. It lies almost exactly 50 miles due south-east of Lhasa, which is reached in four days; but our road lay eastwards, and we had no intention of visiting the holy city.

CHAPTER III

TSANGPO, THE MYSTERIOUS RIVER

We left Tsetang on April 23rd. It had snowed in the night, but the snow was now melting, and the streets were ankle-deep in slush. Before we started, our Ladaki friend offered to change a hundred-rupee note for Tibetan small change, and having poured out from a leather bag a mixture of coins, including Chinese rupees and dollars, Tibetan *trangkas*, and copper *sho*, he did sums in his head, and then began to count out *trangkas* and *sho* to the value of a hundred Indian rupees or thereabouts; a work which took half an hour. When everything was completed, however, he noticed some Chinese characters on the note—for Indian notes always have their value inscribed in several languages—and refused to take it! The newer notes have omitted the Chinese script, and he, poor man, came to the conclusion that ours was obsolete, if not a forgery!

Leaving the town, we soon reached the river bank, where we saw the remains of a chain bridge, long since washed away, and now replaced by a ferry. The river bed here is about half a mile wide, but above Tsetang it expands to between 2 and 3 miles. Imagine, therefore, the long wide corridor of the Tsangpo, with the river mooning sluggishly along between harsh barren mountains at an altitude of 11,000 feet, and the wind roaring over the sandbanks, clogging the air with grit. As yet there is not the slightest hint of the enormous change which is to transform the river; it just flows placidly



CROSSING THE TSANGPO BY CORACLE, BELOW TSETANG

on in this wide shallow trough of the plateau, and might, as far as one can see, so continue for many hundreds of miles, even into China. All the more startling, therefore, is the abrupt change which takes place 150 miles east of Tsetang.

For the first few miles the going was good, though rough. In the evening we reached Rongchakar, at the mouth of the Lhagyari River, which flows in from the south. There is a fine fortress here. At this point the main road leaves the Tsangpo, which breaks through a gorge, and follows up the stream to Lhagyari Dzong; then crossing a high pass, the Putrang La, it rejoins the Tsangpo again some 30 miles below Rongchakar. We, however, continued by the river-side as far as Trap, a village situated within the jaws of the gorge, in order to see whether at this season of low water we could get through all the way. At Trap we were told that there had once been a path on the right bank, but that it had been destroyed by an earthquake some years ago. On the left bank there was a difficult path high up on the cliffs, impassable for ponies. We were left, therefore, with two alternatives—a road from Trap to Lhagyari, and over the Putrang La, on the right bank; or a road via Oga Dzong and the Lung La on the left bank. The former was Bailey and Morshead's route of 1913, the latter was unexplored; we therefore decided to follow it, and crossed the river at Trap by coracle, an operation which took some time as the coracle will only carry four men in safety. Luckily we had a fleet of five coracles, complete with crews.

Having crossed over to the left bank, we ascended a branch valley, crossed a spur, and dropped down into the valley of the Oga Chu, which enters the Tsangpo just above Trap. Meanwhile a change was coming over the vegetation. We had now left the plateau with its

sub-arctic flora behind, and had entered on a dry-temperate region, in which shrub growth was a normal feature and even trees could exist. With the reappearance of woody plants, there is naturally a considerable increase in the herbaceous flora, though little was in flower.

In the Tsangpo Valley itself the first thing that caught my eye away up on a steep sandy slope was the amber glow of gorse, which turned out on closer inspection to be a species of *Caragana*, though it bore an extraordinary resemblance to gorse. In the villages were crab trees, walnut and peach, with hedges of *Buddleia*, and even clumps of bamboo. The rocky terraces were often covered with a thick scrub of *Potentilla fruticosa*, *Sophora viciifolia*, *Hippophae*, *Ceratostigma*, *Coton-easter* and *Rose*, with an occasional copse of birch, poplar and willow entangling ropes of a small flowered form of *Clematis montana*; and the ditches were filled with *Sikkimensis Primula*, which might have been *P. Waltonii*. Characteristic plants of the rocky slope were an *Incarvillea*, growing 3 feet high, a robust *Androsace* and a thistle-like *Morina*, none of these being in flower; and in a bog I noticed *Primula tibetica*.

Continuing up the Oga Chu we reached Oga Dzong on the 26th, and turned east again, up a wide level grazing valley, to the village of Pechen, where we halted for the night.

We usually marched from 10 till 4, with an hour's halt for lunch, which cost us fourpence, viz.: four eggs (casualties replaced), a penny; milk, a penny; firewood and unlimited assistance from a host of willing helpers, twopence. If it was fine we sat out in the open, beneath a tree; if wet, we sought shelter in a house.

On the following day, however, we had to march about 25 miles and cross the Lung La, which is over

16,000 feet ; so we rose at 4.30 and got the slow-moving yak transport with the heavy baggage off at 5.30, we ourselves following an hour later.

It was a glorious morning, not a cloud in the sky, the sunshine sparkling on the frost. Immediately we entered a narrow glen, and for the first time saw Rhododendrons growing in Tibet, together with many other shrubs. *Primula atrodentata*, which closely resembles the familiar mauve *P. denticulata*, was in flower on the turf.

In the afternoon we halted at a herd's tent for tea before crossing the pass. The weather had changed and it was snowing hard. The ascent was easy, except for the last few hundred feet, where we sank knee-deep in the snow.

The Lung La is a saddle between two high snow peaks. The valley head is filled with the remains of a glacier, the end of which had been truncated, and the face showed a regular alternation of blue ice with cream-coloured bands of dirty snow. Towards dusk we started down a steep boulder-strewn valley, and soon got out of the deep snow. There was quite a rich alpine flora here, with several species of *Meconopsis* and *Primula*, easily recognized by their dry fruits.

Presently it began to snow again, and darkness coming on, we could not see where we were going. Being far ahead of the transport, there was nothing for it but to sit still on our ponies and leave them to find the way, which they did. Meanwhile, we had resigned ourselves to a night out, when suddenly we heard a shout, a wall loomed up ahead of us, and through the driving snow we perceived a man holding aloft a torch. Next minute we were being conducted inside the monastery of Chökorchye.

Buttered tea by a charcoal fire soon restored the

circulation, but the transport did not arrive for another hour.

Chökorchye is a solitary monastery in a high alpine valley, many miles from the nearest village; not far away is a sacred lake in which the meritorious see visions.

Next day we descended the valley into wooded country, where the Rhododendron bushes were almost ready to flower. There were green lawns also, here strewn with the golden buttons of celandine, there flushed with rosy stars of *Primula pygmæorum*, or violet and mauve with mats of *P. atrodentata*. In the afternoon we reached the wretched village of Tsegyu, where two hours were wasted effecting a change of transport.

It was dark long before we reached Gyatsa Dzong, on the Tsangpo. Approaching the river through a narrow glen, darkness found us treading warily on a narrow ledge, high above the thundering torrent. It was rather nerve-racking, on the brink of the abyss in complete darkness, not knowing where the path went, and hoping that every turn of the glen would bring us to cultivation. But we went on and on, without coming to any sign of a village, though we passed groups of Tibetans sleeping in caves, with cheerful fires burning; however, luckily, it was quite warm compared with the previous evening.

At last the glen opened out, and we reached Gyatsa at 10.30, though it was long after midnight when the transport stumbled in. By that time we were fast asleep on the floor, wrapped in our coats with our saddles for pillows, and so we remained till daylight.

The maps show Chökorchye and Tsegyu on different streams, but there is only one stream rising from the Lung La on this side; it enters the Tsangpo at Gyatsa, some miles below the point where the main track on the right bank leaves the river to cross the Putrang La.

For the next three days we took things easily. The path was rough, and the valley barren, stark cliffs, seamed with gravel chutes, rising above a wilderness of sand-dunes; but the terraces were dotted with a thin, hungry ashen-grey thorn scrub, which manages to survive the fury of the wind and the long drought till the grudging summer rain comes. The river twists and turns sharply, but still moons along lazily between sand-banks down the echoing rock corridor.

But a change was already beginning like the long-drawn-out change of a late English spring. Villages embowered in trees become more frequent, little oases in the brazen desert; here and there a monastery hangs like a swallow's nest beneath the eaves of a cliff. Now a vague green flocculence is visible amongst the brown twigs of the trees, and along the village hedgerows a white foam of apple blossom tossed up by the wind is streaked with the gold of barberry. There are even a few flowers by the wayside, and everywhere are birds—rose-finches and larks, babblers under the bushes, red-legged choughs, hoopoes, and black and white magpies.

Our transport mooned along too, with half a score of women and girls carrying boxes and bundles which could not be piled on the kicking ponies or the sleepy oxen. The women are short and sturdy, and their habit of smearing black varnish over their faces does nothing either to conceal a latent comeliness or to intensify their ugliness.

On April 30th we reached a village called Trungsashö, which is the birthplace of the present Dalai Lama. The house in which he was born has been pulled down, and a temple built over the site. We were asked if we would like to see the Dalai Lama's sister, and met her taking the ponies to water! She was just a simple country wench, with a rather pronounced goitre, living on in

the old village, completely unaffected by the knowledge that her brother was the ruler of all Tibet, and venerated as a god by millions outside the country. Had she lived in a democratic age, it is certain she would not have remained so reconciled to oblivion.

Next day we arrived opposite Nang Dzong, which caps a sugar-loaf peak of tilted schist on the right bank, and crossed the river, here less than a hundred yards wide, for the second time. At this point it enters another gorge, whose cliffs are dotted with big Junipers. A slight detour is therefore necessary, and on the following day we crossed a ridge of limestone—the first limestone outcrop seen—behind Nang Dzong, returning to the river the second day.

From Nang Dzong we marched a few miles up a glen, where the stream was lined with bushes of Box, whose scarlet and orange leaves were very striking. Turning up the steep flank of the spur we presently entered a forest of poplar, willow and birch, and found our first Rhododendron in flower; it was the 'Taliense,' already met with, bearing trusses of pale pink flowers. Higher up we came to larches, and crossing the Kongbo Nga La (14,750 feet) we found the alpine slopes covered with dwarf 'Lapponicum' and 'Anthopogon' Rhododendron. It was snowing and we could not see far from the top, but we soon got down into forests of larch and fir above, with juniper and pine below, and halted at a solitary house. Some of the cattle transport failed to do the journey, but they turned up next day.

When we reached the Tsangpo again we seemed to be in a new world. A great transformation had taken place, for the valley was green with crops, trees and bushes. The houses had changed, the flat mud roofs of the plateau country being replaced by the wooden pent-house roof of the forest land. Dug-outs are used as

ferry-boats, sure sign that there are big trees not far distant ; and, indeed, below Nang Dzong forest frequently comes right down to the river's edge.

But the river itself had not changed ; it still flowed calmly on amidst a wilderness of dunes and sandbanks, and sometimes we voyaged from village to village by coracle.

Everywhere the people welcomed us, removing their hats and bowing as we approached, and sticking out their tongues at us as we passed. With outspread hands they brought gifts of eggs or milk or butter, and always a white scarf was presented, we giving a similar one in exchange, according to the saying, 'sent with a scarf.'

The weather was wet and gloomy, for it was an unusually bleak spring. Fierce draughts spun the sand aloft, rasping the cliffs ; and under the pewter-coloured skies, the leaden water, dully gleaming, nosing its way amongst the wet dunes and snow-clad mountains, looked very forlorn. One wondered where all the sand came from, till one realized that in the summer the water is pounding the granite boulders together, and that from this mill an inexhaustible supply of sand is being ground, which the wind then piles up for future use. We passed numerous ruined villages, abandoned, I believe, because the cultivated terraces in the neighbourhood or the water supply had been overwhelmed by blown sand. A village once deserted is soon overgrown with thorn scrub.

To the south of us now lay the passes into Tsari and Pachakshiri, as the country at the sources of the Subansiri is called ; but they were all blocked by snow, and would not be open for another two months. Indeed, we noticed as we travelled eastwards, that though trees and plants appeared in ever-increasing variety now, yet spring was more backward here than higher up the

Tsangpo ; this is evidently due to the immense accumulation of snow at the extreme eastern end of the Himalaya.

On May 4th we reached a village called Chake, smothered beneath a shimmering silver green veil of Aspen foliage. Up above grew forests of *Picea* and bamboo, and on the outskirts of the forest I found a heath of purple-flowered 'Lapponicum' *Rhododendron*. The very next day we found near the river bushes of a yellow-flowered 'Triflorum' *Rhododendron*, the Mahogany Triflorum as it came to be called afterwards, by reason of a big red-brown smudge at the base of the corolla. Except for that distinguishing mark, it closely resembles *R. triflorum* from Sikkim.

The open cliffs were now covered with scrub oak instead of juniper, and in the numerous gullies which slashed the mountains into strange butts and pikes, one saw a variety of shrubs, such as *Piptanthus*, *Oleaster*, *Euonymus*, *Buddleia* and *Spiræa*.

Things were not very cheerful with us, however. Cawdor was unwell ; Tom had been bitten in the hand by a savage dog ; and not only did it rain every day, but the clouds came rolling up the valley like smoke, dripping steadily. There was always a wind which at this season blows up the valley, and it got more and more violent as we approached the great snow ranges ; so that even when the weather was fine we were continually harassed and irritated by the sand blast. The one advantage of the rain was that it damped that down !

The transport too was exasperating, and as villages became more numerous, we had to change transport more frequently. Sometimes we had travelled barely a mile from one village, when we reached another, and, according to the custom of the country, had to change

our transport again ; if we changed less than four times a day we counted ourselves lucky.

The ponies, which are never properly broken in, nearly always bolted, strewing wreckage along the track ; packing-cases were stove in and valises ripped up ; even our steel boxes did not escape in the general sabotage, but were either pierced by a rock, or had their locks wrenched off. The oxen, on the other hand, just lay down when tired, sometimes completely blocking the track ; and no amount of hammering would make them get up again until they felt inclined to.

Add to all this that our quarters were always filthy and generally draughty, and it will be seen that altogether we were in a bad way. However, there was a bright side to things also. Arrived at our destination, the kindly people always brought us hot buttered tea, and we could change our clothes by a fire. Moreover, we were now not so very far from Tsela Dzong, where we proposed to make our first halt.

On May 7th we reached Lilung, which stands on a considerable river of the same name. There is a path up the valley which leads to Tsari, though the country to the south of the Himalaya is said to be uninhabited. In the summer, however, many pilgrims go this way to the holy mountains of Tsari.

The bridge over the Lilung River opposite the village had been washed away, and we were compelled to go a mile up the stream in order to cross by a new bridge.

Near here we saw some Lopa (Abor) slaves, and learnt that about twenty-five years ago there was fighting amongst the tribes who inhabit the almost impenetrable hill jungle which lies south of the Assam Himalaya. As a result, some of the people crossed the mountains into the valley of the Tsangpo and were captured by the Tibetans. They seem quite happy under their

taskmasters, who treat them well enough, otherwise they would presumably run away.

Now that we were back in the forest lands, we were infinitely better off than we were on the plateau; and though we found reason to grumble, especially at the wet cheerless weather, it was not nearly so cold as it had been, even at Tsetang, and there was unlimited firewood. Pine torches are used at night too. Food was plentiful, and we were able to buy fowls, eggs, flour, milk, butter, mutton and salt; also rice, curry and Capsicum—these all being imported from Pemakö.

We saw crops of peas and beans occasionally, and there were many fruit trees in the villages. But potatoes are very scarce, and when we came to the end of our supply, brought from Gyantse, three months elapsed before we were able to get any more. The valley here is 2 or 3 miles wide, and one can see some distance in either direction. The river flows in a broad channel, broken by great sandbanks between cultivated terraces which extend to the foot of the mountains. Much more rain falls on the enclosing hills, especially those to the south, than in the valley itself; consequently, they are covered with dense forest, which now comes down to the river.

We were almost directly beneath the Assam Himalaya which were still fathoms deep under snow, and consequently the weather remained cold. Several large valleys come in from the south hereabouts, and there are a number of passes at their heads, used, by a few Abors during the summer months; but practically all communication between Pome and the Tsangpo is via the Doshong La. In fact, this part of the Tsangpo Valley is particularly isolated; there is very little traffic up and down, Lhasa is a long way off, and the people have little cause to travel, as they are well off with

their flocks and herds and cultivation, and receive exotic supplies from the Abors.

At a village called Tungdo we saw two prayer flag-poles each about 200 feet high ; and when, on May 11th, we crossed the Tsangpo for the third time, the canoes used were 40 feet long and 5 feet in diameter. Thus, there are some very big trees at no great distance from the Tsangpo.

Two dug-outs are lashed together by means of ropes rove through holes in the gunwale. They are rowed with paddles, the rowlocks being made of strips of raw hide. After crossing over to the left bank we had about 3 miles to walk to Tsela Dzong, situated in the angle between the Gyamda River and the Tsangpo. At the junction the Gyamda River is about 2 miles wide, and flows in four big streams, with pastures and thickets between ; but most of this land is submerged in the summer.

CHAPTER IV

A BOTANICAL RECONNAISSANCE

Having made forty-five marches from Darjeeling it was a relief to settle down in a house again, and unpack our boxes feeling that we should not have to pack them again for two or three weeks at any rate. We could now set up our table, get out stores, and develop photographs.

Cawdor was not very well, and Tom too was laid up; a rest all round was necessary before travel could be resumed, or the hard work of summer be begun.

Now came the excitement of the first botanical reconnaissance, and after a glance round at the scenery I decided on a route. There was indeed little choice. The *dzong* stands on a flat shoulder of a hill in the angle between the two rivers, and several hundred feet above them. The Gyamda Valley is nearly 2 miles wide at its mouth, and the Tsangpo itself is half a mile wide. Thus we were hemmed in by two impassable obstacles, and could only go up the left bank of the Tsangpo, or up the right bank of the Gyamda River.

But having got so far east, our main object now was to go upwards, and there was nothing to prevent our climbing the slope behind the *dzong*; there was forest at no great altitude, and across the Tsangpo, on the slopes of the Himalaya, the forest came down to a still lower level.

The mountains which flanked the river junction, though fairly high, were not high enough. They looked about 14,000 feet, but there was scarcely any snow on them. The Himalayan peaks, however, just across the



TSETANG ON THE TSANGPO, LOOKING EAST



JUNCTION OF GYAMDA RIVER WITH THE TSANGPO AT TSELA DZONG

Photograph by Lord Cavdor

Tsangpo, though not much higher, were still white with snow. Westwards, on both sides of the river, the mountains were lower.

There is no forest at the bottom of the valley, only thickets of thorn scrub ; but sheltered glens, and even slopes which face inland are well wooded. A perpetual harassing blast blows up these wide valleys, and the dry rocky slopes are covered with scattered thorn scrub, consisting largely of *Sophora viciifolia*, *Rosa sericea*, Caragana, Barberry, Ceratostigma, and higher up Oak. A large thistle-like *Morina* was coming up, and a small pale Iris was in flower.

But though there is no forest in the Tsangpo Valley till the mouth of the gorge is reached, there are trees in all the villages—apple trees, poplars, willows, elms, walnuts and others. There were two species of Poplar, both of them fine trees ; *Populus alba*, the white poplar (or silver poplar as we called it), and another we called the golden poplar, whose young leaves are covered below with a skein of fine golden hairs which secrete a sticky polish. We never saw the former in flower or fruit, only the latter.

Looking down the wide valley of the Tsangpo at this season, to the bend at Temo, one saw a huge expanse of sand ; but in the middle of the day it was a maze of dancing dust devils which gradually flowed together and formed a dense fog. However, that very first evening, being clear, we looked far down the valley and saw a rocky snow-bound peak and remarked on its height ; little did we reckon that we were even then gazing upon the loftiest peak in the Assam Himalaya, Namcha Barwa, which is plainly visible from Tsela Dzong.

Water was supplied to the *dzong* through a flume 2 miles long, which brought it from a glen behind the hill. My favourite walk was along this flume, following

the contour round the hill to the glen where the flume took off, and then down through the woods, past a hermit's cell clapped on to the cliff, to the main valley again.

The hidden side of the hill was covered with a dense growth of small trees and *Rhododendron* bushes, and here the 'Taliense' (K.W. 5656) was covered with domes of pink blossom. In the open it forms a stocky little bush, or shrub, but in the forest it is a stout tree 20 feet high. The buds are a rich rose pink, but the flowers are usually paler, with purple spots; some we saw in the forest, however, were covered with carmine-coloured flowers, and others in the open were almost white. It is a striking species, very free flowering, and uncommonly hardy; I noticed young plants a couple of feet high and not more than four or five years old, bearing great trusses of bloom. It is one of the most widely-spread species we met with, growing on both sides of the Tsangpo from the head of the gorge for nearly 200 miles westwards, with little variation. One thing we noticed, however. Round Tsela Dzong the under leaf surface, which is covered with a thick snow-white felt-like covering, was often disfigured by brilliant orange patches of fungus. Some trees were badly attacked, though they did not seem to suffer. As we went eastwards into wetter country, this pest disappeared.

Another *Rhododendron* which grew here to perfection was *R. triflorum* and its dark variety, which I called the 'Mahogany Triflorum' (K.W. 5687). In the valley it is a small compact scrubby plant with lemon-yellow flowers; but on these sheltered tree-clad slopes it formed a large bush 12 or 15 feet high with reddened flowers which were especially beautiful when the light shone through them. It is abundantly common in Kongbo, but does not extend so far west as the 'Taliense.' The

flowers vary from pale yellow—the typical *R. triflorum* colour—to salmon pink, mahogany, burnt sienna, and other tones. Moreover, the bushes were smothered in bloom and are as hardy as anything.

One other *Rhododendron* grew on these wooded slopes—a bright purple-flowered ‘Lapponicum’ which formed heathery tufts under the trees. Along the flume fragrant clumps of mauve *Primula atrodentata* flowered in April and seeded in May, and here also the mossy spires of a *Cassiope* shook their milk-white bells.

If one ascended the forested glen, where the flume took off, one found several small tree *Rhododendrons*, including a ‘Grande’ (K.W. 5660), a ‘Lacteam’ (K.W. 5759), and finest of all, a glorious ‘Barbatum’ (K.W. 5659). This last grew some 20 feet high and had large rounded leaves and loose trusses of three or four big bell-shaped flowers of the most delicate shell pink and ivory white, arranged in alternating broad bands. It was, I think, the most bewitching *Rhododendron* we saw. Most ‘Barbatums’ produce fat trusses containing twenty or more tightly packed flowers, but this species was exceptional. It was the earliest of the tree *Rhododendrons* to flower, neither the ‘Grande’ nor the ‘Lacteam’ showing any signs as yet; its rose buds fade gradually as the pink and white flower expands.

On rocks in the forests a straggling pink-flowered ‘*Cephalanthum*’ was just opening—K.W. 6700. It grows 8 feet high in the forest, but extends into the alpine region as a dwarf shrub.

Three times I climbed the mountain above Tsela Dzong called Pab Ri, 14,270 feet. Above the thorn shrub, still on the open flank of the hill, came dense thickets of evergreen oak passing gradually into oak forest, where the trees were all draped with pale green lichen. Then after crossing meadows where the dead

sticks of Primulas and Irises were conspicuous, one came out on to the open ridge, though forest still covered the sheltered slope, reaching to the crest of the ridge, but not overstepping it. Scattered bushes of a smooth leathery-leaved 'Souliei' Rhododendron grew here, as well as the pink 'Cephalanthum,' and above that came a thick two-foot tangle of scrub 'Lacteum.' Finally there was nothing left but tuffets and brooms of 'Lapponicum,' not yet in flower, mingled with a silken-leaved Cassiope.

On a fine day there was a splendid view from the summit of Pab Ri. Right below flowed the Tsangpo in a comparatively wide trough with its villages and white monasteries dotting the dun-coloured slopes. Immediately beyond rose the Himalaya, culminating to the north-east in the gigantic spire of Namcha Barwa. Westwards the dark jostling mountains edged with snow were lower; but away to the north glittered the snow peaks of the Salween divide.

One day I boarded a skin boat below Tsela Dzong and floated down to the main river; the water of the Gyamda River was very clear, and I could see hundreds of fish, many of them of large size; but the Tsangpo was thick and muddy. Landing a mile below we continued down the right bank of the Tsangpo, past fields and villages, to Lusha, beyond the monasteries of Temo and Chamnar. There were hedges of Buddleia, Elæagnus, Euonymus and Hippophae, and a good deal of cultivation; for this part of the valley, just above the entrance to the gorge, is well populated. But all the cultivation in Kongbo did not yield much variety in the way of crops, fruit, or vegetables. Wheat and barley are the principal cereals; the only vegetables are turnips, potatoes, occasionally peas, and still more rarely, broad beans. As for fruit, crabs and peaches are plentiful, and there are also walnuts. Indeed, the country is better supplied with

wild fruits than with tame ones, though the former are even more inedible than the latter; cherries, gooseberries and currants we did not risk, even cooked; there were some excellent little strawberries, and several species of raspberry and blackberry were passable, besides blaeberrries.

At Lusha we saw the silver masts of birch trees sticking up out of a heather-purple sea of 'Lapponicum' Rhododendron, or awash in deeper mahogany seas of 'Triflorum.' But it was too early for alpine flowers yet.

Returning to Tsela Dzong, we next crossed the Gyamda River and ascended the shoulder of the peak on the left bank. There was a solitary house up there, but to our surprise we found it untenanted. We were told that nobody lived there because the Pobas were in the habit of raiding it and stealing things while the owners were at work in the fields. Now the owners lived in the village below, but went up the mountain to till the fields.

The weather was very unsettled with much rain, but one morning it suddenly cleared up, so we followed a path we had discovered which led to the top of the mountain, and after a stiff climb reached the summit. The peak is called Kongbo Peri, and though only 14,961 feet high, it has a great local reputation as a sacred mountain; pious pilgrims come from afar to walk round it.

On the way up we found several interesting plants in flower, amongst them the cherry-brandy coloured *Primula Roylei* in the forest, and a species with tiny clots of pink flowers not much larger than a pin's head called *P. kongbaensis*; this last was flowering in the snow all up the topmost ridge, whenever it was not smothered beneath hassocks of 'Lapponicum' Rhododendron. *P. kongbaensis* (K.W. 5703) belongs to the section 'Auriculata' which includes a number of minute species; they are characteristic of high central Asia.

The climb up the final ridge was hard work and we could see nothing of the scenery beyond, which was hidden by a nearer ridge. But at last we reached the top and then there burst upon us with stunning surprise an amazing panorama. To the south-east we could see the whole of the Assam Himalaya with Namcha Barwa 40 miles away, sticking up like a church steeple above cottage roofs ; and north of that Gyala Peri crowned by a great snow dome. Northwards, the Salween divide filled the horizon from end to end, some of the peaks being over 25,000 feet high. Such a barrier naturally is difficult to cross, and so we found it. The only river which rises behind, and cuts through, the range, is the Yigrong, a big tributary of the Po-Tsangpo. West of that come two passes, close together, the Pasum Kye La and the Tro La, the latter being on the China-Lhasa road. The Gyamda River and all its northern tributaries rise on the southern flank of the snow range, and nowhere cut through it. The trend of the Salween divide appears to be a little north of west, so that it cannot be a continuation of the Trans-Himalayan range, which, as we have seen, crosses the Tsangpo east of Tsetang.

Returning to Tsela Dzong we made an interesting find on the dry oak-scrub clad banks, namely the Chinese *Primula pulchelloides*. It is a pretty mauve-flowered thing, but nothing to shout about ; still I hardly expected to find it so far west as this.

At the end of May and beginning of June we had ten days of really fine weather, and the valley grew hot and close. Blossom burst from the bushes. A clump of butter-golden Pæony flowered, and so did the dainty Tamarisk. We walked through lanes of yellow dog-rose into billowy blue seas of Sophora, whose previous year's seeds still lay scattered over the hard ground like a broken string of coral beads. *Clematis montana*, cool and virgin

white in the sultry Jasmine-haunted air, trailed over every tree and bush.

One afternoon we went for a walk up the Gyamda Valley as far as Pu-chu, about 5 miles distant. There is a small temple here, conspicuous for its golden roof, and noteworthy for its Chinese architecture, with curly corners. This roof was fitted with a system of bamboo drain pipes, the top of a long bamboo being split and opened out into a funnel to catch the rain-water, while the bottom opened on to a splash-board.

The temple courtyard was almost deserted save for a few diseased beggars. One horrible leper, his hands replaced by stumps, sat on the steps in the hot sunshine working two prayer drums ceaselessly round and round by means of a rope.

A large valley opens into the Gyamda Valley here and there are two more monasteries a few miles higher up. We were in a very religious part of Tibet.

On the way back to Tsela we met the Chomo *Dzongpön* riding his pony, and surrounded by a knot of servants also mounted. We of course were on foot, and the *Dzongpön*, who knew not who we were, eyed us with ill-concealed disdain. 'Only beggars walk in Tibet' is a contemptuous and well-known phrase; and the *Dzongpön*, who was a stickler for etiquette, could scarcely believe his eyes when he saw us afoot. We returned his arrogant stare with interest, and after our man had answered one or two more or less impertinent questions, we cut the conversation short, and abruptly resumed our walk; we had taken quite a dislike to the *Dzongpön* of Chomo.

At Tsela we occupied the official rest-house, a *dâk* bungalow kept up for distinguished visitors. The caretaker was a crazy woman, who lived with the cows in a shed. Though draughty the roof was water-tight, and

the great advantage of the house was that we had it all to ourselves.

Kongbo is a pastoral and agricultural country, and the people, though poor and stupid, are good-natured and cheerful.

Just as in many parts of Tibet the universal garment is a sort of loose dressing-gown called a *chupa*, so in Kongbo the universal garment is a *gushuk*. Summer and winter day and night, by men and women, rich and poor, the *gushuk* is worn. Take a strip of thick woollen cloth about 8 feet long and 18 inches wide; make a hole in the centre large enough to put your head through, and there you are, complete with *gushuk*. Sleeves? All you need do is to put your head through the hole, haul up 2 feet of slack fore and aft, fasten a belt round your waist, allowing the slack to bag over, and you have a model dress; the fashionable colour is a dull maroon red. Of course you wear more than one *gushuk*, at least in winter. When dirty, reverse and repeat. When cold, wear two *gushuks*, or three. When wet, wear a goatskin *gushuk* over the woollen one, hair inside; when fine, reverse the goatskin; when hot, wear one *gushuk*, pulling it well up above the knees. At night, undo the belt, and the surplus fold falls to the ground, making a long robe in which you roll yourself. It is a wonderful garment, the right thing at the right price. Men, women, and children enjoy it.

The fashion for men is a shorter skin *gushuk* and tight breeches of the same material, tucked inside long cloth boots. Hats are also worn in Kongbo; wide-brimmed, low-crowned circular hats like a parson's, made of white or black yak hair.

The belt consists of a strip of leather with carved silver and brass buckles threaded on it. These belts are made in Lunang and are beautiful examples of the metal-



A POBA OR INHABITANT OF POME



A KONGFA OR INHABITANT OF KONGBO

worker's craft. Men wear their hair short, though it is often curly. Women have long hair, parted in the middle, glossy with butter, and pulled tightly back. Pill-box caps set jauntily on the side of the head are worn in fine weather, and hair hats in wet.

A few days after our arrival at Tsela we paid a ceremonial visit to the *Dzongpön*, only to find that he had gone away, leaving his manager in charge. We exchanged presents with this gentleman, drank oily tea, and made arrangements about our mail, which was to be forwarded from the post office at Gyamda with the official mails, we paying half the cost of the messenger. Mounted couriers do the journey of 90 miles from Gyamda to Tsela in four days.

There were two enormous Tibetan mastiffs chained to their kennels inside the courtyard of the *dzong*; and when anyone approached they set up a deep baying and tugged at their chains, making frantic efforts to get at the intruder. These brutes, though not naturally bad-tempered, are deliberately starved in order to keep them savage, and it would go hard with anyone who was set upon by a dog which stands nearly 3 feet high and weighs close on 200 lb. They are kept only as watch-dogs. Besides the mastiff, there is one other well-bred dog in Tibet, and he is not common. I refer to the Tibetan poodle, a house-dog sometimes seen in monasteries, or in baronial castles. He is something like a Pekingese but larger, not so dish-faced, and without the heavy mane. He has long hair and a curly tail carried over his back like a chow's; the few I have seen were black with a small patch of long white hair on the chest. In every Tibetan village, at least in the river gorge country, the usual loathsome pariahs abound; a surprising number of them are wall-eyed, a condition seen also in Tibetan ponies.

But pets can hardly be said to exist in a country like Tibet, where life is hard and leisure unknown. Though not naturally cruel, even by our standards, people who have to struggle so hard to live at all as do the Tibetans, naturally expect animals to do their bit ; they don't look after them and feed them for fun, and to do them justice the cruelties they inflict are such as they themselves would, and do, bear without flinching. Occasionally one sees a monkey chained to a pole in the central courtyard of the house ; but tailed monkeys are hardly pets, and are kept more for amusement than love.

As to the cruelties Tibetans inflict on each other, these are no doubt severe when occasion arises. One hears much of the cruelty and callousness of the Oriental, in countries where life is cheap ; but no comparison with Western methods is fair (even if it will bear close scrutiny) because the standard is different. It is not that the Tibetan's senses are less acute than ours, but that his sensitiveness is. He is more callous about inflicting pain, but also more stoical about bearing it. The Tibetan suffering from horrible toothache, or badly wounded, cannot go to the nearest doctor and get an anæsthetic ; he cannot even dull the ache with a morphia pill. He must just bear it. That he appreciates any effort to alleviate pain and cure disease we saw at Gyantse, where the medical officer is in great demand ; while Cawdor's medicine chest made us many friends.

The Magistrate or Baron who persistently ill-treated his villeins would soon be put out of the way. No doubt crime is put down ruthlessly ; and so it ought to be, in a country where a few stout ruffians can terrorize a whole district, and in the most effective manner possible.

Criminals are sometimes beaten to death, or have their ears cut off, or are otherwise marked. But the only

criminal we actually saw was a thief who had been beaten and condemned to wear leg irons for life, while being moved from *dzong* to *dzong* all over the country as a warning. He was clanking about the house quite happily at his work when we saw him. Less than a hundred years ago, in the reign of Queen Victoria the Good, convicts were sent in the hulks to Van Dieman's Land. . . .

We had now been three weeks at Tsela Dzong, and had come to the conclusion that it was not really a suitable base. In the first place, it was too low down, the altitude being only 9,500 feet; we wanted to find a village at an altitude of about 11,000 feet above sea-level. In the second place, we were hemmed in on two sides by impassable rivers which prevented freedom of movement; there was only one mountain we could climb, without sleeping away from our base. In the third place, we were only just on the outskirts of the forest region, and too far away from the snow mountains which we hoped to visit. Mountains which rise far above the snow-line usually have a much richer flora than those which barely reach it.

There are three floras in Tibet: (1) The Plateau Flora covers the greater part of the country. There are practically no woody plants, and only a few hundred species of flowering plants, which, being of a sub-arctic type, are useless for horticultural purposes. (2) The Temperate Forest Flora of the upper gorge country. This includes evergreen Conifer forest at the higher elevations, and deciduous forest at lower elevations. There are also alpine meadows full of flowers, and high alpine plants. About four-fifths of our horticultural novelties were drawn from this region. (3) The Rain Forest Flora of the lower gorge country. There is practically nothing but forest, the trees being in great

variety; it is a sub-tropical Indo-Malayan flora and therefore useless for horticulture, unless the plants are grown under glass. Many of the most beautiful Rhododendrons are found here, as well as the finest trees. These Floras of course merge gradually into each other; at Tsela Dzong in fact we were in the transition region between (1) and (2), with forest on the most sheltered slopes and thorn scrub in the open; we wanted to get well within the Temperate Forest region, where we hoped to find extensive alpine meadows and pastures.

We therefore decided to cross the Temo La and make our permanent base at the village of Tumbatse in the upper valley of the Rong Chu, about two days' march east of Tsela Dzong. The advantages of the *rong* were obvious. We knew from Bailey's report that many beautiful flowers were to be found there; the immediate mountains were higher, and we should be nearer the entrance to the gorge, and to the snow-peaks; finally Tumbatse itself is 11,650 feet above sea-level, so that we should be finding alpine meadow flowers on our doorstep, so to speak.

Accordingly we packed our boxes once more, and on June 4th embarked in skin boats below Tsela Dzong. However, we had not voyaged far down the Tsangpo when we were put ashore at the village of Luding, where transport was awaiting us. We then proceeded more slowly over the burning sand-dunes, and down pleasant shaded lanes through cultivated fields; there seemed to be more tares than wheat, but women were busy uprooting these. The midday wind came rushing up the valley, whirling the sand aloft, and we saw large numbers of yellow duck in the pastures.

In the afternoon we ascended the Temo Valley, and presently caught sight of the square fortress-like monastery perched on a high earth mound between two tearing

streams. It is magnificently placed, and a most striking sight from below.

In spite of having to change transport no less than five times—for the rule is you must change at every village, and these terraces are well cultivated,—we reached Temo Gompa in the evening, and rode through the narrow street, lined with brooding lamas, to the guest-house.

Here we were bidden to enter, and buttered tea was at once brought.

CHAPTER V

THE LAND OF THE BLUE POPPY

Temo is an important monastery containing over 200 monks. It stands on a low hill in the midst of emerald green pastures, and commands the valley which leads, via the Temo La, to Pome. We found that ample supplies of rice *tsamba* and flour were obtainable here, so we made it our rationing base for the season ; it is only a day's journey from Temo to Tumbatse.

Shortly after leaving Tsetang we had discovered, to our horror, that we had forgotten to bring any curry powder ; and as curry is the staple dish on such a journey as this, solving compactly the problem of unskilled cooks and tough meat, without it we were at a loss. However we found that in Kongbo they understand the whole art of curry, obtaining supplies of the raw material from Pemakö, the province of mountain and jungle south of the Himalayan range. This *masala* comprised dried fruits, chips of bark, splinters of wood, and seeds ; but the only ingredient I could recognize were the wheel-like capsules of star anise (*Illicium*). The whole was pounded in a stone mortar with a sausage-shaped stone from the river-bed, and made excellent flavouring.

There is a guest-house close to the *gompa*, standing in a pretty garden shaded by willow trees, and here we put up for the night.

Having exchanged scarves, the *Depa* sent us a chunk of butter and three dozen doubtful eggs, to stimulate trade, and after tea we paid him a visit. We found him

in a large airy room the walls of which were formidably hung with pistols and rifles like an arsenal. He was quite a young man, pleasant-mannered and good-looking, expensively dressed in Chinese silks and with an air of urbanity for which travelled Tibetans are noted. Eight years previously he had visited Darjeeling and Calcutta, and had there learnt to appreciate many of the material benefits of Western civilization—firearms, for instance. He gave us Tibetan tea and Indian biscuits and we made a suitable presentation.

We left Temo Gompa on a beautiful summer's day, with larks singing overhead and butterflies playing underfoot, and marched first across boggy meadows inflamed with rosy patches of *Primula tibetica*. Above the meadows, the valley narrowed suddenly, and we found ourselves amidst thickets of Hippophae, *Rosa sericea* and Barberry, laced with white *Clematis montana*, all growing in a very coarse gravelly soil. In places the Clematis was a particularly gorgeous sight, hanging in frozen cascades from the tree-tops or wreathing itself round the bushes.

Wherever water oozed from the base of the hill, the thorn thicket was interrupted by bog gardens containing yellow 'Sikkimensis' Primulas, and clumps of the fine purple *Orchis latifolia*, which is frequently seen in English gardens; pinched bushes of the 'Triflorum' Rhododendron also grew happily in these bogs, and flowered profusely. We soon reached Picea forest and for two hours climbed steadily by a good but steep and stony path. Along the edge of the wood grew drifts of *Primula chungensis*, its bright orange flowers impaled whorl by whorl on snow-white reeds; clumps of *Meconopsis Baileyi* just opening its sky-blue flowers; and *Primula atrodentata*.

Before long Rhododendrons began to play a more active part, and presently we came upon a new species of

the 'Thomsoni' series, which, though the flowers were over, was easily distinguished by its smooth tawny trunk, from which hung rags and tatters of papery bark. Eventually I found one tree bearing flowers of a delicate warm pink shade (K.W. 5732). Another species met with higher up, and just coming into flower, was a yellow 'Souliei' (K.W. 5736). The buds are often brick red, but the flush fades from them as they open, and the orange yellow clears gradually to a pure chrome. This bush recalls the handsome *R. Wardii*.

Camp was pitched early in the afternoon in a little meadow where two streams met; and after lunch I spent the rest of the day botanizing. Not only were there many fine things in flower, there was also to the discerning eye, much coming on.

Next day (June 6th) we climbed to the pass called Temo La, 14,008 feet, and descending a few hundred feet down the far side, camped in the mouth of a small valley where the *Picea-Rhododendron* forest began again. Here we decided to remain for a few days while we explored the surrounding hills, which in places reached a height of over 15,000 feet, and were still under snow.

We were now on the range which runs northwards to the Nambu La, forming the divide between the Gyamda River and its tributaries to the west, and the Rong Chu and its tributaries to the east; the latter flows to the Po-Tsangpo. Between the Temo La and the Nambu La, above Tongkyuk, there is no pass, or at least not one which is used. At the southern end of the range, where the Rong Chu rises, is a group of rocky peaks separating the *rong* from the Tsangpo. Northwards the range is of no great height until the Nambu La is reached, immediately south of which we noticed several snow-peaks. The highest peak in the neighbourhood of the Temo La is one opposite Tumbatse. I spent an

uncomfortable night on this peak, which is 16,008 feet high, in October, watching the snow congeal on the theodolite ; when at last dawn came, it was so thick and heavy with cold mist that I could see nothing ; and I made my way down the steep rock face, treacherous with its covering of snow, in some fear. It had been indeed a wretched and fruitless vigil, but before darkness set in the previous night, I had got a round of angles to the fixed peaks, and seen the evening sun glittering on the snow-bergs to the north, which are the great Salween divide.

Opposite this peak, just across the *rong*, is the conspicuous bottle-necked peak north of the Tang La which we called the Plug, from its resemblance to a volcanic plug ; the tip of it is just visible from Tumbatse. We never climbed the Plug, because we were never on the Tang La or even at Tumbatse when the weather was fine.

On the day we crossed the Temo La for the first time the weather was superb, every peak and pass visible. The snowy range from Gyala Peri in the north to Namcha Barwa in the south stood out as hard and clear as rock crystal against the delicate porcelain blue of the sky. Westwards we looked away up the flat valley of the Tsangpo, with its ribbon of water winding lazily between broad yellow sandbanks ; six weeks later it had engulfed the dunes beneath a seething flood which filled the valley to the brim.

Beyond the Tsangpo rose the snow-clad Himalayan range, faintly luminous against the blue.

At the summit of the pass the open moorland spread out league beyond league carpeted with dwarf Rhododendrons, which, with the exception of a bright purple 'Lapponicum,' were not yet in flower. It was not till the end of June that the flowing tide of colour had crept up from the valley below to the alpine moorland. Then

two species, startling in their delicate beauty, revealed themselves. The first to flower was an aromatic-leaved 'Anthopogon' (K.W. 5733), forming a dense brushwood 6 or 8 inches high. Its tight heads of flowers toss like white sea foam on a choppy ocean of dark green foliage. The other (K.W. 5734) forms lowlier cushions and hassocks of gland-dotted basalt-green leaves awash in a surf of faintly fragrant flowers the colour of crushed strawberry. It has the flower characters of a 'Saluenense,' but not the foliage. The three were mixed up and woven together in endless patterns; one could throw oneself down on this soft springy carpet as one does on the heather-clad hills of Surrey, and gaze across the valley to the lofty white pillars which form the gateway to the Tsangpo gorge.

So far as dwarf alpine Rhododendrons are concerned we found two distinct associations in Eastern Tibet. There was this moorland association on the drier ranges to the north and west of the gorge, and there was the rock garden association on the Himalayan range itself.

On the outskirts of the forest country the moorland association comprised only two species, a purple-flowered 'Lapponicum' and a pink-flowered 'Anthopogon,' as on the hills west of Tsela Dzong. A little nearer the snow range, but still sheltered behind the rain screen which stretches across the mouth of the gorge, this carpet becomes more varied, comprising four or five distinct species, two or three species of 'Lapponicum,' this new 'Anthopogon' with white flowers (the pink-flowered species having meanwhile increased its stature and become more or less a woodland plant), and the strawberry 'Saluenense.'

The rock garden association of perpetual precipitation included a score of species, besides most of those already described. The climatic difference between the two

regions is one of winter, not summer, conditions; the moorland species are of course the hardier, and certainly have to withstand much lower temperatures.

Though poorer in Rhododendrons and shrubs generally, the dry winter alpine pastures are richer in herbaceous plants such as Primula, Gentian, Saxifrage, and *Meconopsis*.

By the second week of June three alpine poppies were in flower at the Temo La—the beautiful sky-blue *Meconopsis simplicifolia*, the very rare 'Ivory Poppy,' and a sulphur-yellow species allied to *M. pseudointegrifolia*.

M. simplicifolia (K.W. 5855) is usually found in small scattered colonies growing on loamy banks under the shelter of Rhododendron bushes, though not in deep shade. The stems grow a foot high, each ending in a single large nodding flower of a rich sky blue, with a sheaf of golden anthers in the centre. It is sweetly fragrant. This is *M. simplicifolia* as originally understood, and as figured in the *Botanical Magazine* (tab. 8364). In recent years, however, a dingy violet-flowered plant, said to be perennial, has crept in under the same name and it was not until 1913, when Major F. M. Bailey sent to England seed of a form collected in the Eastern Himalaya, that the true biennial *M. simplicifolia* was restored to us under the name of Bailey's variety. This *M. simplicifolia* var. *Baileyi* must not be confused with *M. Baileyi* which is quite a different thing and has never been in cultivation before. Our *M. simplicifolia* from Temo La, then, is a fragrant form of Bailey's variety. On the Doshong La we collected a variety with wine-purple flowers (K.W. 5855) and in Pemakö we collected seed of a plant growing on open alpine slopes which we took to be *M. simplicifolia*, though we did not see it in flower (K.W. 6245). This last may therefore be something different.

The sulphur poppy (K.W. 5749) grows scattered over the Rhododendron moorland, and was just coming into flower. It grows 2 to 3 feet high, the main stem bearing a dozen axillary flower stalks which usually spring from a common level, each ending in a large bright yellow nodding flower. Tall and stately, these sulphur poppies are the most conspicuous objects on the moorland, looming above the other flowers like yellow moons.

The 'Ivory Poppy' is referred to elsewhere, and on our first visit to the Temo La these three were the only species in flower. On the screes, however, I found the capsules of two more species which flowered before the end of the month. One was a prickly poppy, resembling *M. simplicifolia* in its sky-blue fragrant flowers, but otherwise very different. The main stem grows less than a foot high, and is composed of a number of separate 1-flowered scapes stuck together towards the base; there are usually several distinct basal scapes as well, each ending in a flower. Thus the plant is closely allied to the well-known prickly poppy of Kashmir (*M. aculeata*). The second is entirely different again. It throws up a jet of little gold and violet silken flowers, each borne on a wiry stem, to the number of twenty or more, which shake themselves out into a sort of Prince of Wales's Feathers. This is *M. impedita*, Morshead's variety; it also grows scattered on the cleanest windiest slopes, where it is extremely abundant (K.W. 5808).

Two more species of alpine poppy may conveniently be referred to here, though they did not flower till much later. The first, a tall 3-foot prickly plant, bears a simple raceme of pale watery blue unscented flowers, and grows on the highest boulder screes, in the topmost ice-worn valleys at 15,000 feet (*M. Prainiana*, K.W. 5909). The last and loftiest (K.W. 5984), found nowhere below 15,000 and up to 17,000 feet, is a yellow-flowered



RHODODENDRONS IN BLOOM IN THE FOREST,
EASTERN TIBET



MECONOPSIS BAILEYI

species clothed with long silken champagne-coloured hair, closely allied to *M. brevistyla*. Both flower in July.

Nearly all these poppies, with the exception of the Ivory Poppy, might be called common; and we were sometimes able to see four and even five species in flower at the same time—a rare treat.

The wet-winter ranges, being thickly covered with Rhododendron, have little room for poppies. At the Doshong La we found only *M. simplicifolia*, a dwarf species of the 'Cumminsia' type, and the Pemakö plant referred to above (K.W. 6245). But the other species were not altogether lacking from the Himalayan range, for several of them occurred at the Nam La, where the climatic conditions were those of the dry-winter ranges, and the flora was consequently quite distinct from that of the Doshong La.

It is a curious fact that, though the genus *Meconopsis* as a whole is noted for its lack of scent, and that blue flowers are generally scentless, yet the few species of *Meconopsis* which are scented have flowers of the clearest turquoise blue. *M. latifolia* from Kashmir, now a well-known garden plant, and the Chinese *M. speciosa* both have sweetly fragrant flowers. To these must now be added our Tibetan form of *M. simplicifolia* and the dwarf 'Aculeate' poppy, *M. Cawdoriana* (K.W. 5751).

We had barely left our camp for the daily excursion on June 8th when Tom came running after us, shouting that the Temo *Dzongpön* had arrived, bringing our mail. We therefore turned back, invited him into a tent, and gave him tea and biscuits while he produced a large packet of letters forwarded from Gyantse. I then showed him some of the plants we had collected, now drying in the press, in order to convince him that we really were the harmless lunatics we pretended to be. He had heard of course that we were visiting his country solely with

the object of collecting plants ; but it would not have surprised us if he had declined to believe in our mid-summer madness without having seen alarming symptoms of it with his own eyes.

The *Dzongpön* who as usual was very spick and span in his purple gown with a jacket of imperial yellow silk and black plush boots and dish hat with scarlet mandarin tassel, had with him half a dozen splendid mules laden with supplies. He was bound for the *rong* to visit his yak herds, and would easily do the journey from Temo to Tumbatse in the day—seeing that it was now but 10 o'clock—against the two days we required. Indeed, on one occasion, Tom rode from Temo to Chunyima, a dozen miles below Tumbatse, in a day ; the distance is about 35 miles, with a high pass to cross and had going down the boggy *rong*. But in Tibet a man well mounted will cover as much as 250 miles in a week. As for the post runners who travel day and night at a steady jog-trot, with frequent relays, they cover great distances at a surprising speed. Letters go from Lhasa to Gyantse, a distance of 120 miles with a wide unbridged river to cross, and a pass of over 16,000 feet, in forty-eight hours ; and remote as Tumbatse is, on one occasion we received a mail from London inside forty days !

At present postal communication in Tibet follows the two great highways,—Lhasa to the Indian frontier, and Lhasa to the China frontier only ; but it will gradually be extended.

This, our first home mail since we had settled down in Tibet, had been forwarded from Gyantse to Lhasa and had thence followed the China road eastwards as far as Gyamda, whence it had been brought on to Temo by private courier, with the official mails. It was a great temptation to cut our morning's work and read our letters comfortably in our tents, particularly as the

day was wet. Eventually I compromised, and having read my home letters, left the others till tea-time ; while Cawdor, always willing to make any sacrifice in the interests of the expedition, put his voluminous correspondence aside and came too.

We spent the day down in one of the deep steep-sided glens which run down to the Rong Chu, and found ourselves in a forest of small tree Rhododendrons, all bursting into flower. The lovely pink 'Barbatum' and the yellow 'Souliei' were the commonest, with the large 'Lacteum' higher up. There were many others, some of which had 'Barbatum' characters, but were not true 'Barbatums'; others of which had 'Souliei' characters, but were not true 'Soulieis'; and still others which had 'Lacteum' characters, but were not true 'Lacteums.' The most definite species was a tree with large flowers of pure ivory white; I chanced on one specimen here, and came across another in fruit in October (K.W. 6215). Cawdor also spotted a distinct species of the 'Souliei' type, having cream flowers flushed almost salmon sometimes, with a crimson flash at the base of the corolla, and a speckled appearance on the upper lobe (K.W. 5757).

The fine weather broke definitely on the night of the 7th, and though we remained in camp till the 13th it rained all the time. Nor were we luckier on future visits to the Temo La. In July we spent five days in pouring rain rounding the head of the Rong Chu from the Temo La to the Sang La—which is a pass for yak only. In September we crossed from Temo Gompa to Tumbatse once more, and it rained without ceasing; finally, we spent the first week of October at the Temo La and Sang La, and for one crowded hour had a vision of Namcha Barwa and Gyala Peri, which was worth six months' rain.

To return to our June reconnaissance. Rhododen-

drons were not the only shrubs met with and marked down for introduction. There was a Barberry. Now Barberries in Britain, and particularly Asiatic Barberries, are legion, and though most of them are as like as two peas, they have all been proclaimed Swans; the best way to avoid trouble was to avoid Barberries, Coton-easters, Viburnums, and other collectors' geese altogether. Therefore, despite the fine glaucous foliage of this bush, I turned away unimpressed. But when the fruits reddened to coral beads dangling from the jet-black stems and the blue-green foliage was shot with scarlet and old gold in the fall, I could no longer refrain from collecting seed (K.W. 5773). A willow glowing with tall silver and red plumes was handsome, and amongst the dwarf Rhododendrons grew a small twiggy *Lonicera* (K.W. 5918) with straw-yellow flowers which I passed by, until I saw the plummy blue-black berries with which it concealed its nakedness in the autumn. It resembles *L. cyanocarpa*.

Primula ninguida, a rather blatant purple-flowered atrocity, grew on the open moorland, and was shamed to a husky whisper by the periwinkle blue of *P. sino-purpurea*, a close relative, very similar in appearance, but easily distinguished from it even in fruit. *P. sino-purpurea*, as usually understood, is a rather vulgar thing, but this was an aristocratic form, with the blue of the distant misty hills in its eyes (K.W. 5731).

Of all the plants mentioned in this chapter, which can we confidently pronounce first class? Just as growers at home require information which will enable them to grow the plants, so do they like to have the points of a plant summed up. They want to know what they are getting. It is therefore the duty of the plant collector to give a brief description of his finds, including habit (that is to say, growth form), colour of flower, and whether

fragrant or not, foliage, fruit, autumn colouring, and so on. Such a description will give a good idea whether a plant is first or second class ; but no amount of description will indicate whether it has quality or not—that indefinable air of good breeding which we find only in the élite. There are many otherwise first-class plants which just lack quality.

But the describing of plants is not easy. Botanical description follows certain well-defined rules, which can be learnt ; what we may call horticultural description, however, is another matter, and depends a good deal on our senses.

Now our senses are poor servants. Even colour sense, which is the most acute as it is the most important for our purpose, is weak. We have, it is true, definite names for many colours, but how many of us recognize them when we see them ? But our colour names are few in comparison with the number of shades we wish to distinguish, and that is the measure of our vagueness. We are forced to fall back on a by no means standardized analogy. Thus we speak of sea green, navy blue, sulphur yellow, sage green, sky blue, and a host of other colours, more or less recognizable, and that is as near as we can get to the required shade. That is to say, though most of us know what we mean by blue, green or yellow, when it comes to defining the kind of blue, green or yellow, we find ourselves groping after a sensation which continually eludes us. Thus we do not match flower colour, we merely indicate its quality ; only haberdashers match colours.

The fact is, even a scientific classification of colour by wave-length is useless for our purpose, and for two reasons. In the first place, spectrum analysis deals with pure colours, whereas flower colours are generally mixed ; and in the second place, we have to deal with reflected

and not with transmitted light. Now the quality of reflected light depends on several factors besides the nature of the light itself, and particularly on the nature of the reflecting surface, which in flowers is infinitely varied. It also depends on the amount of light available for reflection, so that the same flower may take on different shades of colour according to the time of day or the state of the weather.

Smells are even more indefinite. Some are indistinguishable from tastes, or the two are so involved that it is difficult to say where one ends and the other begins. But there are only five primary tastes—sweet, bitter, saline, acid and pungent—not one of which can be confused with any smell; it is only when we come to deal with flavours that, again resorting to analogy, we get into difficulties. Thus we speak of peppermint or pear drops, hardly knowing whether we mean smell or taste; and which of us, unless he happens to be a chemist to whom amyls and ethyls are common objects of the breakfast-table, knows exactly what he means by the smell of pear drops? Only small boys invariably have peppermints and pear drops on their persons; to most of us they are nothing more than a hallowed memory. Thus, with every analogy we lose precision, and only plunge more deeply into misty abstractions. In fact, we can do little with smells except classify them as 'good' and 'bad' or 'aromatic' and 'fœtid.'

It is this capital difficulty which prevents people from attempting to say much about scent in flowers and leaves. Even if we say that a flower has the scent of violets, or musk, or apple blossom, the information, probably inaccurate to start with, will be misunderstood by somebody else, since flowers smell differently to different people. All we can say safely is, that a flower is fragrant, or that foliage is aromatic.

Scent in flowers and leaves is a curious and interesting problem. Some flowers exhale their fragrance only in the dewy morning, others only at dusk ; many aromatic leaves only during the heat of the day. Fragrance is most commonly associated with white and yellow flowers, and least commonly with red and blue. Few Rhododendrons, with the exception of the 'Maddeni' and 'Fortunei' series, are scented, and the flower colour in those is nearly always white. Gentians, Forget-me-nots, Lithospermum, Anchusa, Cynoglossum and Campanula are nearly always blue, and not one of them is ever fragrant. I have already referred to the fragrance in *Meconopsis*.

While on the subject of blue flowers, I might point out that there is a widespread belief that blue predominates at high altitudes. This is a popular fallacy, rarely borne out by facts. Blue is the most *conspicuous* colour in the alpine regions—a very different thing. It is also probably true that the greater proportion of blue flowers occur in the alpine belt ; there are not many blue-flowered trees or shrubs.

The day's work in camp was as follows : We rose early, and I usually spent the hour before tea was ready writing descriptions of new plants discovered the previous day. Then came tea and biscuits, at which meal we discussed our plans, or, since it is not always safe to talk to an Englishman or a Scotsman before breakfast, read our books in stony silence. While the men were breakfasting round the fire, we dressed and went on with our work. Then we had breakfast, usually about 10 o'clock—porridge occasionally, curried chicken or scrambled eggs and *chappatties*. The only things that weren't severely rationed were flour, rice, *tsamba* and butter, all of which could be obtained locally, so that when we were hungry we demolished quantities of

buttered *chappatties*—that is, thin baked cakes of flour and water. We had no bread, of course. After breakfast we went out on the day's excursion exploring, botanizing or taking photographs, according to the weather, usually making some peak our objective. We returned to camp about 4, changed our wet clothes, had tea, and worked or read till supper-time. Supper—menu as at breakfast, with soup instead of porridge and a cup of cocoa to finish up with—was at 7. After that we talked and read by candle-light, recorded the events and observations of the day, and turned in at 10. How peaceful it all was! No train to catch in the morning, no unsatisfactory play to criticize, no income tax form to fill up, no income, no broadcasting, no hustle, bustle, and boost.

All the same, June is a strenuous month for the planthunter, and I often worked ten or twelve hours a day in order to keep abreast of the times. For in June all the flowers are coming out with a rush, and moreover one finds oneself fresh and eager for the task in an astonishingly new and beautiful world. Naturally, one tries to make the most of it. After the long journey by sea and land, it is immensely refreshing to settle down to a serious job. Of course, the pace does not—cannot—last. At the end of two months, altitude and weather—unceasing rain, begin to tell on the nerves. Reaction sets in; and you feel peevish. Then it is you know that the crisis is come, that if you are to get through the long season successfully, you must keep yourself well in hand, and keep a firm grip on things. August is the critical month. It is long and wet. The spring flowers are over, the autumn flowers are not yet out. If you can get through August with your flag still nailed to the mast, you are all right. Things begin to mend. The worst of the rain is over by September, and the weather

is getting finer every day. Seeds are ripening, autumn flowers are blooming, and that shapeless shroud which for three months has muffled a dead world is being blown away to reveal the quick form reincarnated beneath.

Winter comes with its biting winds, its clear cold skies, its sunshine and snowstorms. By this time one is tired with a tiredness which knows no equal; not the tiredness which can be cured by a night's rest, or a week's rest. Every cell and fibre in one's body seems worn out, and it takes months of gradual rest and change of scene to renew one's strength. It is the effect of prolonged living at high altitude of course, not of late hours.

On June 13th we broke camp at the Temo La and started down, following a steep ridge between two streams. There was forest on our left—*Abies-Rhododendron* to begin with, *Picea-Rhododendron* lower down, and on the open valley side a heavy growth of mixed shrubs. It may be as well to give here some idea of the vertical sequence of *Rhododendrons*, in the 'dry zone,' that is to say, behind the first line of defence against the monsoon.

In the alpine region are the three dwarf species, growing together and opening in this order—'Lapponicum,' 'Anthopogon,' 'Saluenense.' Next, the small 'Lacteam,' forming a choppy sea of shrub by itself on exposed slopes, and the pink-flowered bush 'Anthopogon' on the edge of the forest, with a large-leafed 'Lacteam' growing inside the forest. Still lower down come the yellow and salmon 'Soulieis' in the open, and the pink and ivory 'Barbatums' in the forest. Here, too, are found a large bushy 'Lapponicum' and a 'Lepidotum,' both keeping to grassy banks on the margin of forest; the former sometimes extends upwards into the alpine region, the latter downwards into the

lowest valleys. In the *Picea* forest belt there are also the small-leaved 'Grande,' the pink 'Thomsoni' and the rose-purple 'Oreotrephe,' to be described presently. At the bottom level of *Rhododendrons* come the 'Taliense,' either as a tree in the forest or as a bush in the open; the mahogany 'Triflorum' and a purple 'Lapponicum,' probably different from the alpine forms, though not obviously so.

These sixteen species were all we found above the 10,000-foot contour in the dry winter region.

After descending 2,000 feet we reached the *rong*, a wide valley of open pasture and park-land enclosed by forested mountains, where hundreds of yak grazed.

In the bottom of the valley were scattered juniper trees, some of them nearly 200 feet high. The boggy pastures were gay with flowers, and some of the wettest ground was occupied by tussocks of 'Lapponicum' *Rhododendron*, which formed large colonies. Clumps of orange *Primula* and blue poppies peeped out from amongst the bushes which grew along the stream, and we noticed several cherry trees in full bloom. After passing two or three houses and small villages and twice crossing the stream by good solid wooden bridges, we reached Tumbatse, a small village situated at an altitude of 11,650 feet.

CHAPTER VI

THE PARADISE OF PRIMULAS

The Rong Chu flows northwards from a group of high rocky peaks situated on the containing wall of the Tsangpo, immediately above the entrance to the gorge, and discharges into the Tongkyuk River. The upper part of the valley is a wide boggy pasture flanked by wooded slopes, with a swift stream hurrying through thorn thickets in the middle. Every mile or two there is a cluster of houses, dignified by the name of village, where a patch of drier ground is carefully fenced off from the grassland by a leaning palisade, secure behind which are grown barley, turnips and shallot; occasionally also cabbages. Herds of yak browse over the pastures. They belong, not to the villagers, but to the *Dzongpön* of Temo, whose jurisdiction extends over the upper *rong* as far as Lunang.

Lunang itself, a village of thirty wooden houses, is built on a mound overlooking the lower valley, which immediately below narrows suddenly to a winding glen, where the stream fuses and frets over boulders, and trees grow down to the water's edge.

The wide wet vale, gently sloping like a saucer, is ice-worn; the glen below is water-worn. Lunang stands on the terminal moraine of a vanished glacier.

In the glacier valley, edging the stream and sheeting the bogs, are myriads of flowers.

In May the drier turf slopes of the moraines and banks are carpeted with the fragrant *Primula atrodentata*

(K.W. 5664), whose snowy mauve mops borne aloft on powdered poles scent the air for yards. These are over by June, and are succeeded by many flowers, culminating in September with the resounding blue trumpets of a gentian very like *G. sino-ornata*. Then, in June, the wettest open bogs are rosy with little *Primula tibetica* (K.W. 5739), a sleek and glossy dwarf which sends up flowering stems as much as 4 inches high, bearing, maybe, three or four starry flowers of deepest rose pink with bright yellow eye. In September the thread-like capsules are ripe, full of gold-dust seeds ; but, alas ! scarcely one ripens now where two bloomed before, because the cattle browse this plant down. Still, it is not difficult to find, for it grows in bogs so wet and sour that little else will grow there except clumps of vivid orange lousewort.

In the sunny meads, where the ground is marsh rather than bog, since treading here you do not break through the surface crust, grows the moonlight 'Sikkimensis' *Primula microdonta* (K.W. 5746), a beautiful flower, with a fragrance almost stupefying in its sweetness. The stem grows no more than 20 inches high, then spouts out on one side a fountain of rather large lolling pale sulphury flowers. It grows in sheets, in hundreds of thousands all up the wet valley, acres and acres of soft yellow radiance, distilling scent ; but we saw it scarcely anywhere else. South of the Tsangpo it is replaced by 'Joseph's Sikkimensis.' There is an alpine form of the Moonlight Sikkimensis, flooding the high lawns with a more vivid yellow (*P. pudibunda*, K.W. 5906).

Along the grassy banks of the stream, forming sombre deeps amongst the light *Primula* shoals, are violet 'Sibirica' Irises (K.W. 5783), with a cobweb of golden threads woven over the falls. We found and marked one plant of this with yellow flowers, but unfortunately it set no seed at all.



TUMBATSE, OUR BASE CAMP FOR FIVE MONTHS

Photograph by Lord Cavador

When we returned to Tumbatse on July 3rd after our first trip to the Himalaya, the meadows were incandescent with the 'Moonlight' Primula; for July rather than June is the month of Primulas here, just as June rather than May is the month of Rhododendrons. The snow is not melted before June, and the Rhododendrons depend chiefly on snow-water for their early blooming; but the meadow flowers are children of the warm rain. True, *Primula atrodentata* flowers in April and May, revelling in the sunshine and gulping from the snow-water; the rosy *P. tibetica* has faded before the end of June; and along the woodland glades which lead to the alpine pastures, Cherrybim (*P. Roylei*, K.W. 5701) displays an umbel of sleek green cups, full of brown seeds, from the midst of a grass cabbage. But the versatile 'Sikkimensis' family are at home, the grape hyacinth Primulas just in bloom, and those assorted freaks which thrive in the fens of Pemakö—Cherry Bell, the Daffodil Primula, the Golden Primula and others, are poking their heads through the snow.

Beautiful as were the meadows of the *rong*, a patchwork of colour exhaling fragrance, nevertheless the finest flowers hid themselves modestly under the bushes, along the banks of the stream. Here amongst spiteful spiny thickets of Hippophae, barberry, and rose, grew that lovely poppy-wort, *Meconopsis Baileyi*, the woodland blue poppy (K.W. 5784). This fine plant grows in clumps, half a dozen leafy stems rising from the perennial rootstock to a height of 4 feet. The flowers flutter out from amongst the sea-green leaves like blue-and-gold butterflies; each is borne singly on a pedicel, the plant carrying half a dozen nodding, incredibly blue 4-petalled flowers, with a wad of golden anthers in the centre. The foliage is startling enough, the lower stalked leaves reaching a length of 2 feet, the upper

ones sessile, their round-eared bases clasping the stem. Never have I seen a blue poppy which held out such high hopes of being hardy, and of easy cultivation in Britain. Being a woodland plant, it will suffer less from the tricks of our uncertain climate; coming from a moderate elevation, it is accustomed to that featureless average of weather which we know so well how to provide for it; and being perennial, it will not exasperate gardeners. If it comes easily from self-sown seed, as a few species do, it will be perfect. Unfortunately, like the majority of its kind, it has no scent. It may be remarked in passing that the only known species of *Meconopsis* which bears any close resemblance to *M. Baileyi* are the Chinese *M. betonicifolia* and the Bhutanese *M. superba*. Another good plant of the thorn thickets, flowering in June, is the bright orange-flowered *Primula chungensis* (K.W. 5740), closely related to the fiery orange *P. Cockburniana*. *P. chungensis* is a distinctly taller plant than *P. Cockburniana*, carrying five whorls of larger flowers on chalk-powdered stems. Unlike most of the Candelabra Primulas, which are meadow plants, this is a shade-loving species, a woodland plant, growing 3 feet high amongst the rank herbage. By September it has been cast down and trampled on by the rain, so that at harvest time it is by no means easy to find.

But the finest Primula of all is the Giant Cowslip Sikkimensis (*P. Florindæ*, K.W. 5781). Where the Moonlight Sikkimensis grows the Giant Cowslip is not far distant, but always in the shade and always in running water. But it has a much wider distribution than the former, for it is found on both sides of the Tsangpo, from below Nang Dzong to well within the gates of the gorge. It was most happy in the woodland brooks, which in summer overflow and flood the thorn

brake. Here it manned the banks in thousands and, wading out into the stream, held up the current. It choked up ditches and roofed the steepest mud slides with its great marsh-marigold leaves; then in July came a forest of masts, which spilled out a shower of golden drops, till the tide of scent spread and filled the woodland and flowed into the meadow to mingle with that of the 'Moonlight' Primula. And all through August it kept on unfurling flowers and still more flowers, till the rains began to slacken and the brooks crept back to their beds, and the waters under the thorn brake subsided; but the seeds were not ripe till late October.

It is the rampant growth, the massive size of the plant, its great stalked leaves and the rich colouring and fragrance of the flowers, which is so impressive. Sometimes you may see a colony growing on the bank of a shingly stream bed, from which the silt has been cut away, leaving the plants hoisted upon bundles of pink roots, as though supported by flying buttresses. But even without this aid, *Primula Florindæ* (as I have named it, in honour of my wife) grows 4 feet high, bearing sometimes a hundred flowers in its mop!

The 'Moonlight' Primula, so abundant in the *rong*, is no other than the mysterious *P. microdonta*, reported from Western China, and now introduced for the first time. 'Joseph's Sikkimensis' appears to be the same thing (variety *alpicola*) in colour—violet, claret, maroon, purple or white. In one form or another, therefore, *P. microdonta* has a fairly wide distribution, but the colour varieties and forms tend to segregate locally, and as already remarked, the 'Moonlight' Primula itself we did not see outside the *rong*.

It is interesting to note that amongst the 'Sikkimensis' Primulas, though we find complex colour forms (as opposed to yellows), yet the dwarf forms, whether

of the petiolate round-leafed group, or of the lanceolate-leafed group, are always yellow-flowered.

The Candelabra and Sikkimensis Primulas are the garden flowers of the future. They both fall into two colour groups: (1) yellows, and (2) purples. Both are tall and stately, come readily from self-sown seed and, when massed, are very effective. The Candelabras cross easily, giving a fine range of hectic and soothing tones, which blend and contrast with wonderful results. The Sikkimensis Primulas have not yet been induced to cross, but there are signs that the time is not far distant when this will be accomplished, and we shall then have another series of rich colours in these exquisite forms to match with our Candelabras.

Our house at Tumbatse in the *rong*, was one of those wooden-walled shingle-roofed peasant houses commonly met with in the wetter parts of Tibet, where timber is abundant. The inhabitants cleared out two water-tight rooms for us, themselves living in the large family kitchen which every Tibetan house boasts; and a third room, rather leaky as to the roof and draughty as to the walls, where stray travellers slept, was given to our staff. Here they cooked our meals, dried our clothes, and made themselves comfortable.

All the rooms were situated on the first—and only—floor, which was reached from the ground-floor stables by a flight of wooden stairs, or, since this was immersed in Stygian darkness, more conveniently from the courtyard by means of a notched tree-trunk.

Our own quarters suffered likewise from darkness, a tiny window, closed by wooden doors like a cupboard, being the only source of light. One had to sit close up under the window, or remain in perpetual gloom. Even in summer darkness came early, and the dull weather increased the dinginess.

However, though we had our headquarters at Tumbatse, from the middle of June to the middle of October, we were not there very often—a few days only in June, a week in July, a week in August, a week in September and a few days in October.

On the whole we were pretty comfortable. The roof was water-tight, and though the wind blew through chinks in the wall and through the door and the window, as well as up through the floor-boards and down through a hole in the roof, which did duty for a chimney (bringing with it much soot), still there wasn't much to complain of.

Our chief source of irritation was the farmyard, with whose fauna we waged a perpetual guerilla warfare, though neither side could claim much advantage when we finally withdrew our forces. This fauna included an indefinite number of unfed and fed-up dogs, which maintained a bitter hostility towards us till the last, numerous cocks, which crowed steadily from 2 a.m. till breakfast, and several miscreant pigs. On one side of the yard was situated the dairy, where great activity prevailed all the summer.

Operations are conducted as follows: The milk is poured into a big cylindrical wooden churn, which being as much as 4 feet high, must needs be sunk in a pit at one end of the room, to enable the operator to stand over his work. Armed with a curious weapon which may be described as a slotted wheel at the end of a broom-stick, he plunges it up and down in the churn. The milk froths and bubbles, and spouts up in jets through the slots, and the ultimate result is butter, which is made up into fids, and wrapped in leaves. This butter, when fresh, is rather tasteless, and when over-ripe, nauseating; but it is undeniably wholesome.

Every wealthy family keeps a good selection of these butter pistons, each with a different pattern of slots and

perforations ; for, of course, every county family makes its own butter, just as it roasts its own barley, grinds its own *tsamba*, and brews its own beer.

The most interesting thing about our home was the front door. This door, a heavy wooden one, 6 feet high and as much across, led into the yard, whence you entered the stables and ascended to the living rooms ; it was fastened by means of an ingenious wooden bolt, which deserves description.

The bolt itself was hollow, square in section, with a curiously shaped slot cut in the top. It worked in a bolt-way in a wooden beam which was built into the stone wall, forming part of the lintel. Immediately above the bolt-way a wedge-shaped piece of wood had been cut out of the beam, leaving a groove, and the partition between this groove and the bolt-way beneath was bored through at two points diagonally opposite each other ; the wedge had then been replaced. Two stout wooden pegs fitted loosely into these sockets, and projected half an inch into the bolt-way. When the door was fastened, these pegs dropped into the slots cut in the top of the bolt, thus holding it in position ; no amount of tugging could now withdraw the bolt. To open the door a 12-inch key, with projecting teeth corresponding to the two slots in the bolt, had to be inserted down the inside of the bolt, from an arm-hole in the lintel, and the two pegs lifted, while at the same time the bolt was drawn back with the other hand. Of course, when the key was removed, the pegs dropped back of their own accord, and the apparatus, not being automatic, the same performance had to be gone through before the bolt could be shot home. Unless one had the knack, one sometimes fumbled a good deal before one could open the door.

To return to the flowers in the *rong*, mention must be

made of a fine *Cyananthus* which sprawled and flopped about over the ground at the edges of the cornfields without visible means of support. The stems at first make an effort to grow erect, but soon grow tired and lie down, forming a dense tangled carpet of green leaves, nestling amongst which, the big violet flowers play hide-and-seek. The plant is *C. lobatus*, but is an altogether bigger and more boisterous grower than the cultivated form from China, with larger flowers of a deeper and richer hue. In the *rong* it is a sheer weed of the cornfields, but it also ascends a couple of thousand feet into the alpine region, where it is a sturdier plant, growing erect, and scattered on the steep alpine grass slopes. Seed from both varieties was collected (K.W. 5949), and has germinated well. It is a late summer flower—in the *rong* it flowers through August and September, ripening its seeds very quickly, but in the alpine region, time being short, it was earlier; however, we gathered seed of the alpine variety as late as mid-October at the Doshong La, when snow lay deep on the slope and everything was in cold storage for eight months.

Round the home cornfields too, and in the hedges, grew a tall *Adenophora*, slender and dainty, whose tiny white or pallid blue pagoda bells, complete with long clapper, are as neat as can be; and still better a 6-foot rue (K.W. 5899), sending up above the frothy maidenhair foliage, a great puff of mauve flowers, like an evening cumulus cloud. Sometimes one would see such a mauve cloud hanging 10 feet up in a bush, and on examination find that it belonged to a giant rue which had thrust its way up in darkness inside the branches and there burst into a shower of stars. This rue has what the hairbell *Adenophora* lacks—quality; which is an indefinable air of good breeding. It reminds one of *Thalictrum dipterocarpum*, but the perianth is larger, and

usually 5-lobed and the leaves or rather leaflets are smaller.

Many other flowers there were along the margins of cultivation forming a rank tangle, from which one had to pick out winners ; but I was not prepared to put my money on any of them, with the exception of a small white-flowered *Morina*, and that only because, like so many flowers in this country, it was sweetly fragrant. I have seen the same plant in Yunnan, but I cannot recall that it was fragrant there.

As for shrubs, one found the same species of *Rhododendron* as at Tsela Dzong, and a few others ; here they ventured out into the open, instead of always lurking in the hidden recesses of the mountains, for we were further inside the forest land.

A close heath of purple-flowered 'Lapponicum' covered large patches of oozing lawn, where the ground flattened out at the foot of the steep forest ; and just within the forest, lining a burn, we found one of our very best *Rhododendrons*, a bush 'Oreotrepes,' hung all over with masses of rosy-purple flowers. The colouring was rich, and luckily we had found the plant in a good year, at its best ; the glen was simply glowing with it (K.W. 5790). On dry sunny slopes, particularly on old moraines, amongst wizened bushes of the Mahogany *Triflorum* was an undergrowth of dusky crimson 'Lepidotum' *Rhododendron*, which bloomed in July. The precautions taken to ensure cross-pollination in this plant are significant. The flowers stand on edge, erect on their long pedicels, and slightly arched, so as to present only their mailed backs to the rain ; a sensible enough provision in a flower which opens in the wettest month of the year. There are ten stamens of equal length, the filaments of the five upper ones being expanded at the base, while the upper edge of the corolla

tube is slightly inturned to form a flange, where honey is secreted. On the upper lobes of the corolla are painted a number of darker spots and streaks, all pointing like fingers towards the honey bath, held up between the flange and the palisade of filaments. Insects want honey—or, in a few cases pollen, for food; they don't care two straws about pollinating flowers. But flowers want to be pollinated—and the aristocracy want to be *cross-pollinated*; a little honey costs them nothing, and they willingly pay that bounty to insects in return for a little solid cross-pollination work. An insect approaching this Rhododendron flower, reads the hieroglyphics on the corolla, and translating them, 'Step inside; this way, please,' reaches the honey without waste of time. While blindly probing for the concealed honey, it may entangle its legs with the pollen, which is in the form of elastic white threads, and carry some off to another flower. At any rate, these threads may often be seen festooning the lower stamens and trailing all over the flower, as though brought from elsewhere.

The average insect is doubtless a wiseacre; it aims at economy of effort, and goes straight to the point—in this case honey—without creating a disturbance elsewhere, or doing a stroke more work than is necessary to accomplish its purpose. But there is the usual village idiot to be considered—a clumsy oaf which always does everything upside down and inside out. The plant legislates for him, too—it is taking no risks. The device described insures that the clever insect shall concern itself only with the upper male part of the flower, without troubling itself about the female apparatus—which has nothing to offer; but the clumsy insect would be sure to blunder into that, so the plant cleverly removes it out of the way by bending the style down till the stigma projects between the lower lobes of the corolla.

The most stupid insect, fuddled with honey and entangled with pollen threads, cannot now fall against the home stigma on his way out, and deliver the goods at the wrong door; the chances are it will carry them away and deliver them outside the 4-mile radius, where they will be entangled amongst foreign stamens and eventually blown on to a foreign stigma.

After *Rhododendron* there were perhaps more species of *Lonicera* than of any other shrubby genus, though it was not till much later that we found a twining one like our English honeysuckle. They were nearly all small trees, shrubs and undershrubs, remarkable for their flowers, or for their fruits, or both; and in one case for foliage. This last, *L. Webbiana*, which was a small forest tree, produced such inconspicuous dull reddish flowers, that had it not been for the large varnished leaves, one would certainly have passed it by. But in the autumn it lured one with a different charm, displaying gifts of which none could have suspected it; for the fruits, dangling in pairs on 3-inch pedicels, looked more like wild cherries than anything else (K.W. 5822).

In the *rong* itself, the best honeysuckle was a small downy-leafed bush which grew in thorn thickets by the stream (K.W. 5776). It had large straw-yellow flowers, with papery wings, succeeded by orange-scarlet berries. Abundant though it was, it set very little fruit, and I spent a lot of time hunting for berries. This was *L. hispida*.

Not dissimilar in flower was a dwarf alpine species (K.W. 5988), which formed prostrate mats on very steep gravelly slopes facing the sun (or where the sun ought to have been—and doubtless was, though always invisible). Very little else would grow here. This plant made a brave show in bloom and then collapsed. Not a fruit could I find the first day I searched (that was in No-

vember), and I was in despair; but on the second day I picked two seeds off a stone, where a bird had evidently been scraping its beak after making a meal off some berries, and continuing the search discovered a few squashed fruits and extracted the seeds. How I prized those half-dozen seeds no one will ever know, for it was never put to the ultimate test! At the third attempt, subjecting the whole area covered by the plant to intensive search, we were much more successful, securing numerous berries and not a few odd seeds left on the stones.

But probably the best of the dozen *Loniceras* was an undershrub with lovely glaucous foliage and purple flowers, succeeded by big blue-black berries like sloes (K.W. 5872). It is a very distinct new species, and it grew on a steep cliff in Pemakö, smothered amongst *Rhododendrons* and dwarf willow and many other shrubs.

Two roses were abundant all over Kongbo. One was a large bush with deep rose-coloured flowers and bristly flask-shaped fruits like *R. Moyesii* (K.W. 5834). The other, with scented white flowers and smooth fruits, was less common (K.W. 6101).

There are several ways out of the *rong*, over the high ridge which separates it from the Tsangpo, though the only passes in general use are the Temo La and the Nyima La. There is no through traffic. Grain is brought over to the herds, and butter taken back—that is all. The other two passes are the Tang La, immediately above Tumbatse, with an easy ascent from the *rong*, but a most abominable descent to the Tsangpo; and the Pa La or Tra La above Lunang, almost equally difficult on both sides, and easily the worst of the four. The two latter are used exclusively by yak herds who visit the high pastures during the short summer; but

owing to a serious epidemic amongst the yak during the previous year, we found both paths out of commission for the time being and the bothys deserted.

Most of our collecting north of the Tsangpo was done on the Temo La and the Nyima La, which were within a few hours' march of us. Still closer was the Tang La, which we crossed once, and on which we camped several times. But the Tra La, which we crossed in July, on our way home from the Tsangpo, we desired never to see again, even in a bad dream.

The forests which clothe the slopes and fill the glens on either side of the *rong* are composed of *Picea*, and below with an undergrowth of *Rhododendron*, *Lonicera*, *Euonymus*, *Rosa* and other shrubs. As one ascends the *Rhododendron* element increases, and *Abies* replaces *Picea*. There were hardly any flowers in the forest, except by the side of the path, or in clearings, where *Primula Roylei* was always conspicuous. Though it has a vertical range of over 3,000 feet, growing in the depth of the forest and on the open alpine moorland, this plant shows remarkably little variation except in stature. An interesting point is the effect which human interference has had on it. In the alpine region it occurs widely scattered over the moorland; but the small grassy alps on which stand the herds' bothys, and on which the yak are tethered at night, are red with it. These knolls must have been cleared by men in the first instance, otherwise they would be overgrown with dwarf *Rhododendron*, like the rest of the moorland.

On June 18th we made an excursion to the Tang La in order to see how the alpine flora was developing. Ascending by the moraine, we at once entered the silent depths of the forest, where long streamers of lichen fluttered from the trees and everywhere our feet sank into moss which upholstered the forest in yellow plush.

One alp was white with drifts of *Lloydia* like a tiny *Crocus*, and higher up we found little fluffy patches of *Primula Walshii*, with bright rose flowers (K.W. 5802).

Crossing some scree, we reached a ridge between two ice-worn valleys, at the heads of which were cup-like depressions. We thought there might be lakes here, but they were silted up and covered with flowers. In the wet sand grew a white-flowered *Cochlearia*.

We were now at the precipitous foot of the 'Plug,' whose summit was still covered with snow; and in the distance we caught sight of a remarkable vegetable. This was a giant sorel (*Rheum nobile*, K.W. 5805), not yet full grown, but forming a luminous yellow pagoda about 2 feet high. It grows at a most astonishing rate, till it is about 7 feet high; but early in the year as it was, we could count these crazy vegetables across the valley half a mile away, yellow candle-flames against the dark background. A month later, when full-grown, they stood up out of the *Rhododendron* sea like lighthouses. Unlike the Chinese *R. Alexandræ*, *R. nobile* does not form colonies, but springs up here and there on the steeper slopes.

The Tibetans eat the young leaves, and we tried to make a cauliflower-au-gratin out of the heart of one; it was edible, but insipid.

Another interesting flower was the dwarf *Primula rigida*, found growing with another 'Nivalis,' *P. ninguida*, on gravel patches amongst the 'Lapponicum' *Rhododendron*.

It was not, however, till July that the flowers of the alpine region were fully out—except, of course, at the Doshong La, where the alpine *Rhododendrons* flower a month earlier. We spent July 5th–9th at the Temo La, marching round the head of the valley; and here we saw the dry winter region alpine flowers at their best.

All the poppies were now flowering together, and though the heavy sky rained ramrods on them, they cared little. The big blue prickly poppy (*M. Prainiana*, K.W. 5909) seems to epitomize the swift passing of summer in these alps. The long carrot-like root is as soft as a sponge, the stem hollow and watery; the first two or three flowers open and fade quickly, battered by wind and rain, to be succeeded by others, and again others. It is a flimsy jimcrack thing in spite of its beauty—here to-day and gone to-morrow.

Many brilliant louseworts were in bloom on the lawns, and drifts of yellow *Primula pudibunda*, and the beautiful blue cups of a gentian and crimson patches of *Primula philoresia* on the rocks. But by far the finest sight was the moorland, all frothy white with Cassiope and the 'Anthopogon' Rhododendron, and streaked with the purple foam of 'Lapponicum' and 'Saluenense,' on which the sulphur poppies tossed and swayed like buoys. But the tree Rhododendrons were over.

Another conspicuous plant on the boulder screes was a species of *Sedum*, which formed large compact clumps; in autumn the leaves turn scarlet.

A feature of these alpine valleys of the *rong* is their semicircular or broadly oval shape at the head, constricting suddenly to a bottle-neck below. The upper valley is usually fairly level, with moraine dumps here and there, and screes all round; but the bottle-neck exit is always steep as well as narrow. Once in the alpine region, travel from valley head to valley head is easy, even over the very steep shattered ridges which divide one valley from another; nor is there ever any difficulty in crossing the range, from the head of one valley to the head of another. The yak herds wander freely all over these alps. The difficulty occurs when you want to pass from the alpine region to the *rong*, through

the steep forests. There are only a few paths, and most of them avoid as far as possible the deep wooded glens, keeping to the crest of a ridge or a moraine. But in July we followed a bottle-neck valley from where the Rong Chu had its source and found the going bad.

CHAPTER VII

IN THE RHODODENDRON FAIRYLAND

June is the month of Rhododendrons in Eastern Tibet. We decided that the snow would by now be melting on the Himalaya ; and on the 20th we left Tumbatse on our first serious expedition.

We had selected the Doshong La as our objective for several reasons. We knew nothing about it from the botanical point of view, but it was on the map, and it was close to the great snow-peaks ; also it was near the Tsangpo, and therefore near Tumbatse, and being only 13,500 feet high, might, we supposed, be an easy pass. Finally, it had been crossed from the south by Majors Trenchard and Pemberton of the Abor Survey Party in 1913 (and therefore existed in fact, as well as in theory). Unfortunately these modest explorers had published no account of their journey other than a few matter-of-fact statements in an official report. Thus our proposed trip was by way of being a Himalayan reconnaissance ; the fact that it turned up trumps was due more to good luck than to foresight.

The day was moderately fine, with even a little dilute sunshine, and we crossed the high range which encloses the Rong Chu by the Nyima La, 15,240 feet, camping some hundreds of feet down the other side. There was no snow here, but we had a good view straight across the abyss in which flowed the Tsangpo to the Himalayan peaks, 20 miles distant ; and the valleys there were so clogged with snow that it looked impossible to reach the

Doshong La at all. The flora of the Nyima La resembles that of the Temo La, but of course we found a lot more plants in flower now. Amongst the sea of dwarf Rhododendron was a purple *Nomocharis*, the stem bearing a single nodding flower like that of *N. lophophorum*. This is the little known *N. nana* (K.W. 5809).

The high grassy alps at 16,000 feet were spangled with dwarf *Primula*, bearing large violet or mauve flowers with white eye and deliciously fragrant. This was *P. rigida*, one of the pretty 'Nivalis' type, with long slender sausage-shaped capsules. When we came to collect seed of it, not a capsule could we find where the grass had been carpeted with flowers; but we got some seed of it from a small patch found at the Tang La, just above Tumbatse (K.W. 5801).

It was at the Nyima La we first saw the 'Ivory Poppy' (*Meconopsis* sp. K.W. 5766), a beautiful member of the barbellate haired section. Whether it was a cream or ivory form of *Meconopsis simplicifolia*, which it closely resembles in habit, or a distinct species, I have been unable to decide. Certainly it closely resembles *M. simplicifolia* in all essential respects, and they occur in company. Against that must be set the circumstance that the Ivory Poppy tends to have cream and even sulphur-yellow flowers, rather than ivory white, which is contrary to all precedent. No *Meconopsis* is known—or has been known hitherto—in which the flowers are sometimes blue and sometimes yellow. Blues vary to violets, purples and reds; or the colouring matter may be entirely absent, so that a dead white results. Yellows also vary in shade, though to a less extent. But the yellow-flowered group and the blue-flowered group have always remained antagonistic.

Another interesting fact about the Ivory Poppy was this: it was very rare—so rare that we counted only

six plants of it, though these were widely scattered. I emphasize this point because it is an uncommon experience to come across a really rare plant. A plant may be common everywhere over a large area, or local—that is to say, found only in a few or even in only one locality, though common there ; but it is very seldom really rare. Even when it appears to be so, it may be owing to the fact that one has reached only the outskirts of its distribution, where naturally it is rarer than towards the centre ; further search towards that centre will generally reveal it in ever-increasing numbers.

It is of course possible that we were only on the fringe of the Ivory Poppy's domain ; but we covered a lot of ground, and it seems unlikely. When one considers what countless thousands of plants of almost any small species one sees in these mountains, it will be realized how startling is a rare plant. Some are more abundant than others ; some more local ; but generally speaking, the rarest plant is seen in thousands. The dwarf 'Nivalis' Primula referred to above was certainly local ; we saw it in two places only on the one range, and close together, perhaps not more than a couple of thousand plants. But it occurs also in Western China, 300 miles farther east. The dwarf yellow *Meconopsis* is local, for we found it in only one locality, though it is abundant enough there. The 'Geranioides' Primula referred to below was rare at the Nyima La, but extremely common at the Pasum Lake. We saw hundreds of thousands of plants of the Giant Cowslip Primula, of 'Joseph's Sikkimensis,' and of the Moonlight Sikkimensis ; and *Meconopsis impedita*, though scattered, occurred on every range we crossed, and over such a vast area that there must be literally millions of plants in Eastern Tibet alone. Even the big yellow *Meconopsis* (K.W. 5910), which only grows above 16,000 feet, occurs on both

sides of the Tsangpo and on mountain ranges 100 miles or more apart; so that it cannot be rare.

As for plants like some of the dwarf and scrub Rhododendrons, 'Sibirica' Irises, Pedicularis, Aster, and other sub-alpines, they are found in such staggering numbers that the brain fails at the thought of their abundance.

To return, then, to the Ivory Poppy of uncertain relationship. We marked down our plants carefully, since the supply of seed was obviously so limited. Alas! when we came to collect it, hardly a capsule had set any seed at all! Such are the trials of the plant collector.

There was still one chance, however. In fruit it was not possible to distinguish this plant from *M. simplicifolia*. Therefore by collecting seed of every *M. simplicifolia* one saw, one might be collecting seed of the Ivory Poppy too. Though I have no wish to arouse hopes which it is beyond my power to satisfy, those who have *M. simplicifolia* under the number K.W. 5737 may possibly harbour an angel unawares.¹

Another Meconopsis now seen in flower for the first time proved to be a new species of the Aculeate group—K.W. 5751, *M. Cawdoriana*. It grows on grassy alpine slopes, attaining a height of 10 or 12 inches, and boring as much as 3 feet into the ground with its long tap-root. The flowers are sky blue, with a shock of trembling

¹ Since writing the above, I learn that an unknown Meconopsis, with no number, has been raised from our seed. This can only be the species collected in Pemakö in October, which we took to be a form of *M. simplicifolia*, not having seen it in flower. It differed from typical *M. simplicifolia* in its longer style and in having on the average twice as many flowering scapes—six to eight, against only three to four in *M. simplicifolia*. The number of this plant is K.W. 6245, and it was abundant in Pemakö. The question arises, is this the Ivory Poppy in its natural haunt, the half-dozen plants we found north of the Tsangpo being strays? We shall soon know when it flowers in 1926.

golden anthers in the centre and deliciously fragrant. Amongst the Aculeate with sky-blue flowers this plant comes nearest to the Indian species.

Descending the steep valley towards the Tsangpo we passed through forests of *Rhododendron* and so into mixed forest, where two interesting *Primulas* were discovered—both woodland species.

The first was a tall plant carrying two or three whorls of dark chocolate red flowers; the leaves, which are brightly silvered below, have rather the consistency of wet wash leather. The discovery of this plant came as a surprise. Its nearest relatives—*P. Maximowiczii* and *P. szechuanica*—are found 400 miles to the east, and it seemed hardly likely that they would turn up on the Himalaya. Yet here was one of them; and as though that were not enough, we found the other south of the Tsangpo! These two chocolate and yellow respectively like the north-west China plants (and moreover botanically almost identical with *P. Maximowiczii* and *P. szechuanica*), differ from them in one important respect: they are both fragrant.

As garden plants, however, they are not likely to be of much value. Experience shows that they resent our climate. Moreover, the flowers are small, and are made smaller by the way in which the corolla lobes are reflexed against the tube. Even their fragrance, therefore, will not save them; they are of botanical rather than of horticultural interest.

The second find was the 'Geranioides' *Primula* (*P. latisecta*, K.W. 5819), which formed small colonies under the trees in deep shade. The cut leaves and bright purple-pink flowers so closely resemble those of certain *Geraniums* that at first sight I could hardly believe the plant *was* a *Primula*. It is rare here, but abundant farther north, growing in loamy soil.

Below this the forests became more mixed, with larch and fir, and many deciduous trees such as maple and birch. There was the fine *Lonicera Webbiana* too, not much to look at in flower, but a beautiful sight in fruit; and some magnificent bushes of the rich purple 'Oreotrephes' Rhododendron overhung the stream. We saw this plant in only two glens, so conclude that it is local; but it was abundant in those localities, struggling for dominion with the bright yellow 'Souliei.'

As we descended, the trees grew larger, reaching huge dimensions at an altitude of 11,000 to 12,000 feet; but the forest as a whole was more open, on account of the heavy shade cast by the big trees. Here and there occur open meadows of tall flowers which are a sea of colours, chopping and changing as the wind blows.

Coming out of the forest on to the open hillside which was covered with scrub oak and thickets of 'Taliense' Rhododendron, where in the dry gravelly soil grew masses of *Primula pulchelloides*, we reached houses and cultivation. A steep descent brought us to the Tsangpo, and the ferry just below Pe, and we crossed over by canoe—two dug-outs lashed together, capable of carrying three ponies at a time.

Close as we now were to the entrance to the great gorge, there was little change in the appearance of the valley from what we had seen several days' journey above Tsela Dzong. There were the same sand-dunes with their meagre growth of thorn scrub, the same steep gravel banks and rocky slopes thatched with bushes, the same absence of trees, except near cultivation.

Just below Pe, where the ferry plies, the river broadens out into a great lake about a third of a mile wide. Its altitude at this point is 9,680 feet. Immediately afterwards the valley contracts to a deep trench, cut through

the glacial gravels, and the river, dropping swiftly, roars into the gorge.

After crossing the torrent which flows from the Doshong La, we reached Pe, where we spent the night ; and on the following morning (June 23rd) we started up the glen towards the Doshong La.

We had not gone far before we entered the forest, which here consisted of a large-coned pine like the Chinese *P. Armandi*, and a small-coned species, Larch, *Picea*, Poplar, Birch, and a great variety of shrubs, such as *Rosa* (two species), *Deutzia*, *Pieris*, and *Lonicera*, with clumps of Bamboo and several climbing plants, *Smilax*, *Clematis*, and others. The *Rhododendrons* were at first the usual species—the ‘*Taliense*,’ ‘*Souliei*,’ and ‘*Triflorum*’ ; but these were soon replaced by others, and in such bewildering variety, that it was evident we had struck a rich vein.

In the first stratum of forest, ground flowers, which grew along the side of the path, were the big mop-flowered *Androsace* and pretty *Pyrola Forrestii*. This stratum was quickly replaced by another ; and we found ourselves in *Rhododendron* forest, where the ‘*Barbatum*,’ pink ‘*Thomsoni*’ and small ‘*Grande*’ were respectable trees.

Presently came the first meadows, which in truth were bogs. The men said the ponies could not get through these, and wanted us to camp, then and there. It was, they said, the only flat ground where we could camp. But as we were scarcely a thousand feet above Pe, and obviously a long way from the pass, we refused to do so, disbelieving them on both counts. Persuasion of the men on our part, and of the ponies on theirs, had the desired effect ; we surmounted the obstacle by unloading the ponies, and Tom was sent ahead to look for a camping-ground.

Eventually we reached a meadow at the foot of the cliffs, and pitched our tents in a bog between two torrents. One torrent came from the Doshong La itself, the other from an equally steep valley which was blocked by an avalanche; the foot of the avalanche indeed was only a hundred yards from our encampment. The two valleys were separated by a high rocky ridge crowned by a truncated spire, which seen from below resembled the Potala at Lhasa. Both glens were heavily forested, and flanking the valley which led to the Doshong La was a lofty cliff.

No sooner were we settled in our watery camp, than the floral wealth of this old glacier valley began to dawn on us.

The lower meadow was filled with Joseph's Sikkimensis *Primula* in five colours—violet, purple, maroon, sulphur, and cream, the last two forming an herbaceous border along the forest paths. The Giant Cowslip Sikkimensis also grew here, on bog slides. But it was the Rhododendrons which provided the greatest surprise, and without stirring from camp we added three fine species to the collection.

Lining the banks of the torrent, often hanging over into the frothing snow-fed water, was a brilliant-flowered 'Saluenense' which recalled the well-known *R. calostrotum*. It has the same twin flowers, large flattened pentagons of rich rosy purple, and the same dull rusty under-leaf surface; but in detail this Doshong La plant (K.W. 5828) differs considerably from the Burmese *R. calostrotum* (K.W. 3390).

In mass it is a wonderful sight, the clumps of glowing colour illuminating the dark roaring water over which it hung.

In the bog were tufts of an inferior species (K.W. 5829), with hairy smelly twigs and leaves, and jaundiced

flowers breaking into an unhealthy rash of greenish spots. This, however, did not flower till the end of June. It is evidently a variety of the Chinese *R. trichocladum*.

The third species was a jewel of the first water. So far we had found no scarlet or crimson-flowered Rhododendron. But once well inside the great forest belt—which may be said to begin east of the 92nd meridian—we found several, none better than the one we now gazed upon for the first time. It grew in dense drenched thickets by the torrent, as a bush 8 or 10 feet high; later we found it in the forest, a bigger bush, or small tree, 15 to 20 feet high. The flowers are large, fleshy, in loose drooping trusses of five, and of an intense burning scarlet; at the base of the corolla are five circular jet-black honey-glands, each about the size of a shirt button—hence the name Coals-of-Fire bestowed on K.W. 5830. It is one of the ‘Thomsoni’ series, and has the peculiarity of bending its flower-stalks almost into an S, the corollas hanging down, while the curved capsules stand erect.

A perpetual drizzle assailed the Doshong La. There is a low gap in the Himalayan range here between Namcha Barwa and the peaks to the south-west, the Doshong La itself being only 13,500 feet; and as this is the narrowest part of the eastern Himalaya, the distance from the Tsangpo flowing north at Pe, to the Dihang (as the Tsangpo is called in the Abor Hills), flowing south at Yortong, being less than 30 miles, the rain-wind which rushes up the Dihang from Assam comes flying over this gap, flooding the pass and the valley below.

There is not room on the north flank of the range for much forest, but on the south flank there is ample room and the forest grows with a luxuriance only seen in regions constantly moist. Even on the north flank, however, the flora is extremely rich, different to anything we had seen on the other bank of the river. It was at

first sight remarkable how different the flora was on the two sides of the range, considering the similarity of the climate in the upper regions. But this difference tended to disappear in the alpine region ; and when we remember the contrast in conditions lower down it is not so surprising that the floras diverge more and more as we approach the Tsangpo on the one side, the Dihang on the other.

We spent a week at the Doshong La and climbed every day, but two days stand out vividly in my memory : June 24th, when we made our first ascent into the alpine region, and June 29th, when we crossed the pass and descended into Pemakö. But Pemakö deserves a chapter to itself, and I shall now confine my remarks to the flowers we discovered near our camp.

The day after our arrival we set out from camp to ascend to the alpine region, selecting the avalanche as the best route. Thus instead of having to cut our way through the dense scrub which clothed the steep slope above the forest, we could walk on the snow, keeping to the open valley, where the torrent flowed beneath the avalanche. Nor had we climbed far when we began to find treasure. There were ruffled seas of 'Glaucum' Rhododendron (K.W. 5844), with a pink foam of blossom frothing over it, and brilliant clots of purple 'Saluenense.' Broad bands of sulphur and pink striped the sheltered slope, where two scrub species, a 'Souliei' and a 'Lacteam,' made an impenetrable wire entanglement, 3 feet deep ; and the former became known as 'Yellow Peril' by reason of its aggressive abundance. The slope was steep and difficult, so that we halted often to regain our breath, and to collect specimens. Once when gazing across the torrent to a steep grass slope, I pointed out to my companion some brilliant scarlet leaves which formed a pattern on a rock ; and he, taking out his

telescope, looked at them long and carefully. 'Why,' said he, at length, 'they aren't leaves, they are flowers; it's a *Rhododendron*, I believe.' 'What!' I shouted, almost seizing the glass from him in my eagerness; and gazing as he had done, I realized that he was right. They were flowers, not leaves—flowers of vivid scarlet flaming on the rocks.

Straightway we tried to cross the torrent, but finding that impossible, continued up stream to a dangerous-looking snow-bridge; this we might have risked crossing, so great was our anxiety to reach the prize, but at that moment we observed another blaze at our feet, and there was Scarlet Runner as we called it, laced to the rocks.

For a minute we just stared at it, drunk with wonder. It lay absolutely flat on the rocks, no part of the plant, not even the corolla, which is considerably larger than the leaf, rising 2 inches above the surface; stems, leaves, and flowers cling as closely as possible to the ground. Some of the mats were 18 inches in diameter, with stems as thick as a man's little finger, and must have been many years old. But the plant grows slowly and keeps to the sunny side of the slope, sprawling over the barest gneiss rocks, where nothing else will grow. It is the first of its kind to flower and the first to ripen its seed; for the winter sunshine melts the early falls of October snow, when the bushier species of the lee slope are buried alive. Consequently it has to withstand much lower temperatures than *Carmelita* and its allies; I have seen it lying out on the bare rocks night after night in a temperature which approached zero. Scarlet Runner, in fact, goes through the whole evolution of flower and seed production in the five months, June to October!

A word as to the relationships and distribution of these creeping *Rhododendrons*, of which *R. repens* may be

taken as the type. They belong to a series of dwarf undershrubs with blood-red flowers and are closely allied to the Chinese *R. neriflorum*, which gives its name to the series ; they are entirely confined to the very wet ranges separating the rivers which pour through the Himalayan gap. Thus they are alpine plants of the temperate rain forest region, the region of winter snow and summer rain, and nowhere else, from the extreme north-west corner of Yunnan, in China, across the headwaters of the Irrawaddy in Burma, to the eastern end of the Himalaya in Tibet. The discovery of Scarlet Runner on Namcha Barwa extends their known distribution 300 miles to the west, and forges an unexpected link between the eastern and western flanks of the 'gap' flora ; for hitherto the type was known only from the Mekong-Salween and Salween-Irrawaddy divides, where *R. repens* was discovered by Mr. G. Forrest.

Continuing the ascent by a steep gully, we found ourselves ploughing through snow and an inextricable tangle of dwarf Rhododendron. There was nothing else but Rhododendron in fact,—sulphur seas of Yellow Peril (K.W. 5853), lakes of pink 'Lacteum' (K.W. 5863) and a vast confusion of 'Anthopogons' of all sizes and colours, which completely swamped the few poor little brooms of violet-flowered 'Lapponicum' (K.W. 5862). Above the Rhododendron turmoil there was only snow ; we therefore made our way round the base of a cliff and over the spur which separated us from the next valley, descending towards the stream which flowed from the Doshong La. There we hoped to strike the path and return to camp.

But it was not so easy as it looked. Below us was the valley under deep snow vaguely visible from time to time through rifts in the white cloud which came pouring over the pass ; below us were cliffs, whose depths we could not

plumb ; and between the bottom of the valley and the path raged a torrent swollen with melting snow and half hidden by unmelted snow which concealed many a trap. We therefore advanced cautiously, in a rapture of joy at what we found. We were on a giant stairway of smooth rock, whose steps, ice-carved ledge by ledge, were filled with dwarf *Rhododendron* in astonishing variety.

At the top on the naked rock was Scarlet Runner in proud isolation. Sometimes it crawled over the flat, and reaching the edge of the step, shot out tongues of fire visible a mile away across the valley. It was already in full bloom, passing over lower down, and flowered so freely that mats and festoons were smothered beneath the blaze. The virgin snow dabbled with its hot scarlet, spread a bloody sheet over the tortured rock.

A little lower down were the twiggy brooms of *R. damascenum* or Plum Warner (K.W. 5842), its absurd little plummy mouths pouting discontentedly at us. Mixed with this, on the sheltered ledges, grew the more coarsely woven mats of Scarlet Pimpernel, another fiery 'Neriiflorum' (K.W. 5846). At first sight it looked like a darker edition of Scarlet Runner ; but on closer inspection it was seen to be a bigger plant, with larger leaves and darker flowers, borne two or three in a truss instead of singly.

Just as Scarlet Runner was succeeded by Scarlet Pimpernel, so lower down on a lee slope, Scarlet Pimpernel was succeeded by Carmelita (K.W. 5847). This plant belongs to another branch of the family. It is bigger again, with still larger leaves, and flowers of luminous carmine, in threes. It grows socially, in foot-deep tangles, and is not really a creeping plant at all, but prostrate with ascending stems ; also, lest anyone should think that it is not sufficiently distinct from the other two, it may be remarked that it flowers and ripens its

seed a fortnight later than Scarlet Runner. In October we dug it out of the snowdrifts in order to get seed; and the crimson conical capsules were found to be scarcely split at the apex, when those of 'Scarlet Runner,' lying prone on the rocks, were wide open and empty.

Next, amongst a chaos of fallen rocks, we found a thicket of Plum Glaucum (K.W. 5843), one of the most striking species of all. The flowers are dark cerise, borne in pairs as in Plum Warner, but formed more after the pattern of Pink Glaucum, which the leaves with their white waxy under surface recall. In size it is intermediate between Plum Warner and Pink Glaucum, and it looks rather like a cross between the two; but it requires more shelter than Plum Warner.

Thinking that we should find this species abundantly lower down, and finding that we were at the moment in an awkward cul-de-sac, I omitted to mark this spot. We got out of the predicament, and—I never saw Plum Glaucum again! It was only by retracing my route laboriously up the cliff in October, when everything was hidden under a pall of snow, and every landmark wiped out, that at the third attempt I rediscovered the little hollow in which our only Plum Glaucum grew. How well I remember the occasion, for it was in the lilac dusk one frozen night when at last I came on it, excavated it, and triumphantly secured a little seed! As for Pink Glaucum, whose silvered leaves and flat 5-flowered corymbs resemble those of *R. glaucum* itself, it grew everywhere in the bottom of the valley in billowy masses of pale pink and mauve tones.

After crossing the torrent we found the path on the far side under the cliff, and descending through the forest reached camp. It had been a wonderful day.

The weather continued bad, though with fine inter-

vals ; cloud was always blowing over from the Pemakö side, and falling in a fine drizzle. During the next few days, however, we paid a visit to the pass, and explored the main valley, with excellent results.

About a thousand feet above our camp was a basin, now silted up and partly overgrown with scrub Rhododendron ; once upon a time it had been a small lake, now it was a marsh, but in the winter it might, we thought, be a dry meadow. The torrent, after tumbling headlong a thousand feet from the upper valley, flowed calmly, in a deep winding channel, gathering itself for the final rush and tumble down the valley to the Tsangpo. It was just the place for a camp, being on the fringe of the alpine region where all good things grow. From this glacier flat we climbed a steep cliff and immediately found ourselves in the upper valley with the giant's stairway on the right, and bold cliffs, striped with short rubble cones, on the left.

In October the upper valley was under deep snow, but by the end of June this had nearly all melted except for a permanent snow-bed at the top end ; the head of the valley rose very steeply to the narrow pass, but we were able to ascend by the snowfield on a zigzag slant. The upper valley was also filled with moraine tips, which showed up darkly here and there out of a heaving sea of Rhododendron.

The 'Anthopogon' Rhododendrons were many and various, and as these formed great bushy colonies alone by themselves, we must say something about them. On the steep broken slopes which lined the foot of the cliff, grew a bush species with brick-red flowers and long narrow leaves having a light chocolate-coloured indumentum ; it was replaced in the hollows by a much smaller plant with sulphur-yellow flowers and large leaves with buff-coloured indumentum (K.W. 5849).

Other species or varieties had white or pink flowers, and leaves variously coated ; it was really quite impossible to say which were species and which were not, but we found at least four very distinct 'Anthopogon' Rhododendrons, namely, the white-flowered chocolate-leaved species (K.W. 5733), the pink-flowered woodland-shrub species (K.W. 5700), the red-flowered undershrub species, with long narrow leaves and light chocolate indumentum (K.W. 5850), and the cream-flowered undershrub (K.W. 5849). This last is something like the Chinese *R. charitostreptum*.

Two other Rhododendrons worthy of more than passing mention we found on the rubble cones which caught the midday sun—when there was any. At any rate, the snow melted here first in summer and did not come to stay till late in the fall, when everything else was already tucked up in bed and fast asleep. K.W. 5851 (*R. mekongense*) is a small compact bush with bright yellow flowers, flushed red on the reverse, opening before the leaves. It formed brilliant banana-coloured hassocks all up the slope, while in the thickets lower down the flowers were already over and the leaf-buds had erupted in a green haze. I thought it one of the best yellow-flowered species we met with.

The other, K.W. 5856, a very distinct species, was a wee thing which spread in tufts over the ground, bristling with pinkish purple flowers. These are borne in pairs on long pedicels, and so long are the capsules besides, that they stick up through the snow like tiny fingers. The seed was not ripe till the middle of October, by which time the plants were buried under a foot of snow ; but I could see the tips of the projecting capsules, and was able to excavate the plants.

It is impossible to do justice to the Rhododendrons at the Doshong La as we saw them in June ; the valley,

flanked by grey cliffs, roofed by grey skies, with the white snowfields above, spouting water which splashed and gurgled in a dozen babbling becks ; and everywhere the rocks swamped under a tidal wave of tense colours which gleam and glow in leagues of breaking light. The colours leap at you as you climb the moraine : Scarlet Runner dripping in blood-red rivers from the ledges, Scarlet Pimpernel whose fiery curtains hang from every rock ; Carmelita forming pools of incandescent lava, Yellow Peril heaving up against the foot of the cliff in choppy sulphur seas breaking from a long low surf of pink 'Lacteum,' whose bronzed leaves glimmer faintly like sea-tarnished metal.

Nor were the Rhododendrons, though the most showy and abundant plants of the high valley, the only ones. There were Primulas here which we saw nowhere else. On June 25th we climbed to the pass, and collected many species. The most interesting of these were the Golden Primula (*P. Morsheadiana*, K.W. 5858), with nodding heads of rich golden-yellow flowers, and spherical capsules, filled with black seeds ; the 'Daffodil' Primula (*P. falcifolia*, K.W. 5839), an extraordinary bog plant, with bright yellow fragrant flowers, borne singly or sometimes a pair on the scape ; and Cherry Bell (K.W. 5859), which is *P. Valentiniana*, a dwarf with one or two nodding flowers of dusky red, flowering amidst the melting snow.

In the high alpine region, above even the dwarf Rhododendron, were mats of pink and pale yellow Diapensia, glued to the rocks, and sheets of crimson 'Dryadifolia' Primula (*P. philoresia*) ; and on the cliffs were dwarf Primulas such as the tiny *P. glabra* and the rosy eyes of *P. rhodochroa*.

The snow was soft and deep, and it was a hard struggle up to the pass ; on the other side we gazed down into a

cauldron of whirling mist, through rents in which we could see only snow. It was hardly possible to move our camp over the pass yet, because the porters would not be able to carry our loads through such deep snow ; but we noticed, stuck in a cairn at the top of the pass, something which fired us with the ambition to go down into Pemakö ourselves, even if we were unable to return the same day. It was a branch of a big-leafed Rhododendron, the first we had seen, one of the 'Falconeri' series. It was a fine leaf, bright cinnamon red beneath, olive green above ; and certainly no such tree grew on our side of the pass. Obviously there was no great difficulty in crossing the pass ourselves, since we had reached the summit ; besides, we met three men on their way over from Pemakö, carrying light loads. We therefore made a vow to go down into Pemakö until we came to this big tree Rhododendron. What we saw there may be left till the next chapter. On June 30th, following our trip to Pemakö, we broke camp at the Doshong La and returned to Pe, where we halted for lunch. Crossing the river by the ferry, we sought shelter in the first house we came to, as it was raining very heavily. Owing to our carelessness in sitting on a native rug to drink tea, we were silently surrounded by fleas ; and no sooner were we safely in bed than they unmasked their batteries. A dreadful persecution followed, and we scarcely slept a wink all night. When daylight at last put an end to the torture, even the joy of killing some fifty intoxicated fleas, too fat to jump, was tempered by the reflection that several escaped, and it was two or three days before we were clear of them.

However, our morning tea had no sooner been brought in—and never did we need it more—than a native runner appeared with our mail, which put us in a better humour. It was barely two months since our last mail. After

breakfast we started for the Nyima La, camping early in the forest so as to get a good night's sleep ; and on July 2nd, in pouring rain, we recrossed the pass and descended through seas of scented Primulas to our home in the *rong*.

CHAPTER VIII

PEMAKÖ : THE PROMISED LAND

Pemakö is one of the Tibetan provinces which lies on the south side of the Himalaya. It is situated chiefly within the great knee-bend of the Tsangpo, comprising what we have called the Assam Himalaya ; but it also includes part of the upper Dihang Valley above the Chimdro confluence. Thus it is completely contained between the parallels of 29° and 30° and the meridians of $94^{\circ} 30'$ and $96^{\circ} 0'$, though it does not include the whole of that area and has no defined boundaries ; on the flat it covers no more than about 25,000 square miles.

I give these details because Pemakö is an unknown and remote region. Not only is it extraordinarily difficult to reach from any direction ; it is still more difficult to penetrate and explore when reached. Surrounded on three sides by the gorge of the Tsangpo, the fourth is blocked by mighty ranges of snow mountains, whose passes are only open for a few months in the year. Beyond these immediate barriers to east and west and south are dense trackless forests, inhabited by wild unfriendly tribes.

Pemakö consists entirely of ranges of lofty mountains separated by deep and narrow valleys. The Assam Himalaya, with its mighty peaks Namcha Barwa and Sanglung, forms as it were the solar plexus, and from this, great ranges radiate in every direction, throwing off in turn a confusion of spurs ; and the whole, from the snow-line to the river gorge, is covered with dense forest.

Add to this a scanty population confined to the main valleys ; a climate which varies from sub-tropical to arctic, the only thing common to the whole region being perpetual rain ; snakes and wild animals, giant stinging nettles and myriads of biting and blood-sucking ticks, hornets, flies and leeches, and you have some idea of what the traveller has to contend with.

The sub-tropical valleys of South-eastern Tibet are inhabited not by true Tibetans, but by various tribes of Tibetan stock, the so-called Tibeto-Burman family. Pemakö is occupied so far as we know by : (1) Abors, who are only one of several jungle tribes included under the Tibetan name Lopa. (2) Mönbas, a civilized people who emigrated from Eastern Bhutan a century ago, and are now found in the Tsangpo Valley in considerable numbers. (3) Kongbas or emigrants from Kongbo—a Tibetanized people. (4) Pobas, emigrants from Pome, the province which lies to the north of the Tsangpo bend ; until recently Pome was independent of Lhasa, and the inhabitants are not true Tibetans, though they speak a more or less intelligible dialect of the Lhasa language. The Pobas have always been known as great robbers. (5) Kampas, emigrants from the great eastern province of Tibet called Kam. The Kampas are Tibetans in a comprehensive sense, though the more sophisticated Tibetans of Lhasa profess to regard them as country cousins ; as a matter of fact they are a highly civilized, cultured, and progressive people. Their language resembles that of the Pobas.

Thus it will be seen that with the exception of the Abors, who were the original inhabitants, all the peoples of Pemakö are recent immigrants. The Pobas and the Mönbas between them drove back the Abor tribes towards the Assam frontier ; and this movement is no doubt still going on, as more people settle in Pemakö.

Why, it may be asked, this anxiety to settle in Pemakö ? It is because this is the Promised Land of the Tibetan prophecy. This prophecy was to the effect that, when their religion was persecuted in Tibet, the people should go to Pemakö, a land flowing with milk and honey, where the crops grew of their own accord. Most races have their promised land, and such legendary places must necessarily be somewhat inaccessible, hidden behind misty barriers where ordinary men do not go ; otherwise people would quickly explore the land and explode the legend.

Pemakö served the purpose admirably ; and when twenty years ago the Chinese came to Eastern Tibet with fire and sword, the prophecy seemed about to be fulfilled. At any rate, many Kampas then emigrated to Pemakö.

But the Mönba migration had taken place long before that, and there have, doubtless, been other migrations. At this time, many Kampas were settling in Pemakö in order to escape the heavy taxation levied in Tibet ; a reason which we could at any rate understand, though it would need more than five shillings in the pound to drive us there permanently !

Pemakö is not directly under Lhasa, but pays taxes to the Raja of Pome, who claims the territory. The claim of Lhasa to Pemakö, therefore, depends firstly on the relations between Lhasa and Pome, and secondly on the relations between Pome and Pemakö. There can be little doubt that even Pemakö is becoming gradually more Tibetanized.

The province is of great use to Tibet as a source of rice—which is becoming popular amongst the well-to-do classes, supplementing the universally eaten *tsamba*. It also produces curry, dyes, and timber.

We were up early on June 29th, and left camp at 8 o'clock. Two Tibetans accompanied us. No time was

wasted in the home valley, and we reached the pass in two hours.

So far the day had kept fine ; but that was only because so far the mountains had hurled back the dirty stuff in Pemakö before it could cross the pass. We saw it heaving ominously down below, preparing for another onslaught ; beyond that we saw nothing but endless snow, and two Mönba coolies toiling up.

We went down as fast as we could, but the snow was soft and sticky. At the first glacier flat we came to a stream which was visible through holes where the snow had caved in, exposing beautifully stratified sections 10 feet thick.

We soon reached the lip of the next cliff, many hundred feet high, and too steep to hold much snow. Far below we could see a valley and trees. The descent was terrific and the streaming water added to the danger ; but before we were half-way down we came into marvellous thickets where every shrub seemed a desirable prize. There was a beautiful *Lonicera* with glaucous leaves and rich purple flowers (K.W. 5872), and a dwarf creeping willow, with erect spikes 2 or 3 inches high ; but especially was there a tanglewood of *Rhododendrons*, stout bushy shrubs with ascending stems reaching a height 5 or 6 feet. The most abundant was *Pink Glaucum*, smothered in mauve or apple-pink blossom. A number of queer forms with azalea-like leaves and carmine flowers, having purple honey-glands at the base, or white flowers speckled purple, or even cream flowers, tipped with pink, were perhaps related to the ' *Neriiflorums*.' Their bell-shaped corollas, especially those with white flowers speckled purple, were crowded with hundreds of tiny flies ; I marked several distinct plants which were all jumbled up in the most awful confusion, and while doing so, caught sight of something a

little distance away which astonished no less than it delighted me ; it was a *Rhododendron* with bright orange flowers, that rarest of all colours. But it was no easy matter to reach the spot. It grew some way up the slope, in the midst of this tanglewood, which for long held me at bay. But in the end I reached the prize, to find a *Rhododendron* of the 'Cinnabarinum' type dangling orange tubes before my fascinated eyes. Most people know *R. cinnabarinum*, decked with its fleshy bright cinnabar red tubular flowers ; with the sunlight streaming through it, it becomes enveloped in a wine-coloured aura and is one of the most lovely species. Substitute orange for cinnabar red and you have Orange Bill, the prince of orange *Rhododendrons*, K.W. 5874. The young foliage is verdigris coloured, and the bushes gleam shrilly against the snowy cliffs.

But I had a really desperate time getting seed of it. It grew, as I say, well up the steep slope and often out of reach on the cliffs above. I went after it on October 22nd during a heavy snowstorm and got a few capsules. On October 26th I tried again ; by this time the bushes were well snowed up, but I got some more seed, and it is a relief to think that the seeds are germinating, considering the awful strain on my temper while struggling in that accursed cold muddle.

At the foot of this wall the valley widened into a large amphitheatre shut in by high cliffs. Water splashed and gurgled down a hundred narrow slots in the cliffs, whence tons of snow had been vomited into the valley and lay there piled in an immense heap 50 feet thick. It looked as though it would remain there all the summer, dwindling slowly, till renewed by the first snowstorm. Yet there was evidently only one season's stratum there ; and when we returned in October, almost the whole had disappeared save for a few crusts lying about

in odd corners! Some idea of the destruction wrought by these chutes each spring was conveyed by boulders which lay scattered over the surface of the snowfield; most of them had no doubt been brought down by small avalanches.

The flowers were blooming bravely in this cold storage chamber. Water streamed down every slope, and every slope was quick with Primulas and baby Rhododendrons; it leaped in shrill cascades over every cliff, and every cliff was clogged with bushes.

First we spied a gamboge sheet of *Primula chionota* (K.W. 5868), which grows on alpine turf or rock slopes with its feet in mud and water; and then a sheet of squat grey Primulas, and then a whole amazing alp of slender violet Primulas, and then a bogful of mixed yellow and white Primulas. Belike these last two were the same thing; and so it proved. But when we came to compare the squat grey and slender violet Primulas with the yellow and white, and found that they were all the same thing, only colour varieties, one marvelled more than ever at Nature's nursery. *P. Dickieana*, for such is the plant's name, is no new thing. It is found on the wet alpine ranges of Upper Burma, Sikkim, and Tibet, though probably nowhere in such variety and abundance as here. It is not, I believe, in cultivation, though seed of it has been sent home several times (K.W. 3389). The fact is, these wet alpine Primulas, *P. Dickieana*, *P. Valentiniana* and others will not stand our climate.

In October, when we came to collect seed of *P. Dickieana*, scarcely a capsule could we find. Whole roods of it had left no trace. A few withered capsules were seen, and after long search a few containing seeds (K.W. 5869), but most of them came to naught. This was not surprising, for how were the flowers to be pollinated in this universal and everlasting deluge?

Crossing the avalanche, we descended a steep rocky path, where small trees and shrubs were mixed up with boulders, to a great flat marsh, where the forest began. And here we halted ; for on the edge of the forest grew the big cinnamon-leaved *Rhododendron* which we were in search of. The flowers, now almost over, were white with a purple flash at the base of the corolla, in large fat bunches. Isolated trees on the edge of the forest grow as much as 25 feet high ; but it also forms thickets by itself, and was very abundant from this point for several miles down the valley, in thin mixed forest. It belongs to the 'Falconeri' series, of which several species are known from China, Sikkim, and Burma ; but the bright cinnamon-coloured under-leaf surface on this plant is quite distinctive. Ample seed was collected at the end of October (K.W. 5877). Amongst a mixed lot of shrubs and small trees I noticed the scarlet 'Thomsoni' Coals-of-Fire, here forming a well-rounded tree ; Birch, Maple, Larch, dwarf Cherry, Willow, Viburnum, *Rhododendron trichocladum*, Lonicera, Rubus, Rowan, Barberry, *Rosa sericea*, Ribes, Euonymus, and others I could not name. In the undergrowth were many interesting plants coming up, though few were in flower. The purple-flowered form of *Meconopsis simplicifolia* was common, and a big *Arisæma*, with chocolate-coloured spathe, the tip of which was drawn out into a whip-lash so long that it trailed on the ground.

We had now reached the edge of the snow, where the forest began ; and the valley was just a swamp. We would have liked to explore further, but there was no time ; and having rested a quarter of an hour to eat our rations, we started on the return journey soon after 1 o'clock. By this time the mist was pretty thick, and it was raining steadily, but through an occasional break we could see the snow-covered wall, 3,000 feet high, which

separated us from our camp. It looked absolutely sheer; and in silence we took off our hats to Majors Trenchard and Pemberton, who first of all white men had crossed the Doshong La. Then we started on the job. Steady slogging through the snow brought us to the summit by 3.30, drenched and cold—we could not move quickly enough to keep warm when wet through, and the wind was very raw. This was decent going, however, considering that we had to halt frequently to mark *Rhododendrons*. We found one particularly charming dwarf species with small regular lilac-purple flowers, which spread itself over some of the moraines and gravel tips. It flowered again freely in October, though not on the same plants. Unfortunately it was one of the rarest species met with (K.W. 5876).

Once over the pass the weather improved and we even found the sun shining below, with light showers flying over our heads. We reached camp at 5 after a highly successful day.

Looking back on the hill regions of Pemakö one is struck by two things: (1) the perpetual rain and saturated atmosphere; (2) the almost inconceivable wealth of flora. We superficially explored one alpine valley in Pemakö for a distance of perhaps 5 miles, and in a few brief days collected about forty species of *Rhododendron*, half a dozen *Primulas*, and many other trees, shrubs and alpine plants. If we include the gorge of the Tsangpo in Pemakö, the number of *Rhododendrons* alone amounts to some sixty species.

What, then, are the conditions which give rise to this extravagant flora? In the alpine region, a vegetative season lasting through five months of perpetual rain, and a resting season of seven months during which everything is buried under the snow; as we descend through the forest belt—Conifer forest, mixed forest, temperate

forest, to the sub-tropical forest of the lower valley, the vegetative season grows longer, the resting season shorter, till at last there is nothing left but a slight check in the winter, and snow gradually disappears. But rain there is always, winter and summer.

The inference seems to be that perpetual precipitation is the cause of this immense variation. Of course the rainfall at the Doshong La, even on the Pemakö side, is not by any means enormous; there are many places in India, for example, where the annual fall must be far greater. The point is that there is never any dry season; rain falls at all seasons of the year, and only in the alpine region is there a deliberate cessation of activity.

On October 21st we started on our second visit to the Doshong La, this time taking our camp with us. We intended to stay a few days in the valley on the far side of the range where we had halted for lunch in June, and if the weather showed any signs of being fair, we hoped to descend some distance into the forests.

It was a gorgeous morning when we broke camp, and the marsh was glazed with ice. I started before the main body, as I had to leave the track to collect seeds, and it was half-past one before we reached the pass. By this time the wind was blowing up from Pemakö, and the sky was overcast. Presently the snow began to fly.

The descent in the soft snow was worse than in June, and most of the plants were buried; but I resurrected seed of *Primula Valentiniana*, *P. chionota*, *Meconopsis*, *Lloydia*, and other species. When we came to the cliff where the shrubs began, I soon found the purple-flowered *Lonicera* again, its stems now cloyed with luscious blue-black berries, and several of the *Rhododendrons*. But Orange Bill, to my horror, I could not see! The fact is, it was the most abundant and conspicuous bush on the cliff above the track, its new leaves now of so

startling a metallic blue-green against the dead-white background that the eye blinked and passed it over to alight on something more restful! Who would have thought that those massive verdigris-coloured bushes—so desperately out of reach too—were the same as the solitary shrub which we had seen swinging peals of orange-coloured bells in the thicket four months ago!

Below the amphitheatre, which was now almost clear of snow and carpeted with dwarf willows, were many flowers—violet Aconite, butter yellow Potentilla, Crawfordia, Corydalis, and little heathery bunches of milk-white Cassiope, so frail and slender as to seem unreal in the October rawness. But these plants like it. Perpetual rain and snow have no terrors for them. The rasping wind which buffets and numbs on the passes is hardly felt where the flowers nestle close to mother earth. The saturated clinging atmosphere, the soft flying rain, the gentle wet kiss of the mist as it rolls on up the valley, they love. It is these caresses which soften the bleak attentions of a harsher climate; the dull kick of the frost, the hammer-blows of the naked sun, and the bite of the thin hungry alpine air. And so, three days later, on October 25th, after a ceaseless onslaught of snowstorms, we found many flowers exultant in the snow: fat flourishing clumps of Golden Primula and of the Daffodil Primula, Aster, Gentian, Pedicularis, *Rosa sericea*, *Rhododendron trichocladum* and others. Nor did the flowers look any more sorry for themselves than those which bloomed in June; indeed, the dwarf *Rhododendron* (K.W. 5876) was flowering much more freely now than it did then, and the winter flowers were more pink than purple.

There were, however, two exceptions to the above statement. One of the best marked characters of the Daffodil Primula (*P. falcifolia*) was its fragrance; but

the autumn-flowering plants were quite scentless. As for the Golden Primula (*P. Morsheadiana*), its flowers were no longer so butter yellow, but looked anæmic, though otherwise happy.

This early winter snow plays a very important part in determining the vegetation and I must draw attention to a curious paradox, which may be stated thus: dwarf alpine Rhododendrons do not endure such low temperatures as many larger shrubby and bushy species. This is not perhaps obvious at first sight, but a little reflection will convince anyone that it is true.

By October 18th, all the alpine species found at the Doshong La were finally covered for seven months beneath the snow; and at this time the minimum temperature (sheltered) at the foot of the alpine slope rarely fell below 30° F.

Now it is clear that the shrub species such as Yellow Peril and Carmelita, and the bushy undershrub species such as Pink Glaucum, must entangle a layer of air beneath the snow-roof; they are not completely flattened by the weight of snow, and large cavities exist, as I found on exhuming them in order to collect seed. The result of the snow blanket is therefore to keep that air, and hence the plants, comparatively warm; warmer than the air outside, which is cooled by radiation and wind. Probably the temperature under the snow never falls much below freezing-point; at any rate, plants of Carmelita and Yellow Peril, buried under the snow, had not screwed up their leaves into tubes, and that is one of the first things a Rhododendron does in self-defence when low temperatures are experienced.

Now consider those alpine species which come from the drier ranges, the 'Lapponicum' and small 'Lactum,' for example; and the bush species from the valleys—the mahogany 'Triflorum,' pink 'Taliense,'

and others, what they suffer. In the first week of November at the Nam La, the temperature (sheltered) fell to 4° F. (28° of frost) in camp. The following Rhododendrons withstood this temperature: *R. elæagnoides* (K.W. 5994), strawberry 'Saluenense' (K.W. 5734), snowy 'Anthopogon' (K.W. 5733), small 'Lacteum' (K.W. 5718), and a 'Lapponicum.' Nor was this exceptional, since on four consecutive nights we had 28°, 25°, 11° and 23° of frost. Moreover, the temperature in the open fell even below this.

Much lower down in the forest we recorded 8° of frost, where grew many species of tree Rhododendron, including the pink 'Barbatum,' yellow 'Souliei,' 'Roxieanum,' 'Grande,' and big 'Lacteum' species.

Throughout January in the Gyamda River Valley the weather was fine, and the night temperatures were very low. On the 11th we recorded 39° of frost, on the 25th, 38° of frost; the 'Taliense,' 'Triflorum,' 'Lacteum,' 'Souliei,' and pink 'Anthopogon' Rhododendron were common here. Again, these were not exceptionally low temperatures, and near Gyamda in the same month, we experienced the following frosts: 31°, 28°, 22°, 34°, 20°, 23°, 25°, 11° (twice), and 10°. That is to say, the above-mentioned five Rhododendrons must be prepared to stand naked in 30° or 40° of frost almost any night for several months; for them there is no escape—they are not protected by snow. They grow, it is true, in communities, or in forest; but the temperature there can be little if at all above the readings of our sheltered thermometer.

What is perhaps more important than the warm temperature at which these small snow-covered alpine plants spend the winter, is the fact that it is *constant*. Day and night, in calm and storm, the temperature beneath the snow blanket, once that is sufficiently deep—and a few feet is enough—does not alter.

In June, long before the snow is all melted, the Rhododendrons are flowering furiously. Jostling waves of colour chase each other up the valley. Rain falls almost continuously and the fast-melting snow supplies unlimited quantities of water ; the ground is just a filter through which flows a constant stream. Above all, the atmosphere is saturated, and the sun, muffled by the flying scud, rarely breaks through.

Quickly as the snow melts, however, there is such a vast accumulation of it that before the last drifts have disappeared October has come, and snow has begun to fall again. Thus these alpines are active for less than five months in the year ; in that time they must flower, be pollinated, ripen their seed, and open their capsules. For the remaining seven months they sleep. Small wonder if we find them obstinate, and even sulky in Britain ! Considering the treatment they get, the wonder is they are so amazingly adaptable, at least in some parts of the country. Obviously the districts most to their liking will be the west coast and the hill country. But in any case we are apt to work them to death, for in Britain the vegetative season lasts about nine months ; and they are exceptionally lucky if they can down tools for four. And then, when they have dropped off to sleep—we wake them up suddenly some bright sunny morning in February to tell them the obvious lie that Spring is come ! How can we expect them to roll over and go to sleep again for another two or three months after that ! Sometimes they do not hear the second call ; they have gone home. Nor can we cover them up decently, as they are used to being covered ; for snow in England is almost as rare as nuts in May, and our dwarf plants which sleep at a constant temperature for even months in Tibet, naturally suffer from insomnia, under the inconstant temperature their nakedness invites.

Alpine Rhododendrons, therefore, are bound to be awkward customers, and though far from despairing of them, I feel that the more we understand of the conditions under which they grow in nature, the more easily shall we succeed with them in Britain.

In an abnormal year the mortality will certainly be frightful ; but abnormal years are not unknown in other countries, and are equally fatal.

In the boulder moraine just above the marsh where our camp was situated the thickets were striped with brilliant colour, to which the lurid leaves of a *Viburnum* contributed patches of hot orange. It had very few fruits, however (K.W. 6246). Bunches of snow-white berries clustered on the bare boughs of the Rowan ; long tassels of red fruit hung from the Currant ; and the knobbly scarlet clubs of *Arisæma* thrust themselves into view beneath the bushes.

It was late when I reached the swamp with the day's spoil. Cawdor and the vanguard of the transport had arrived, but there was no food, and we were famished as well as drenched. However, the last porters struggled in at 6 o'clock, just in time to get the tents up before darkness fell ; we had some hot tea, changed, and sat down to supper at 9 o'clock. By that time we felt restored.

The swamp was now even more of a swamp than it was in June, and continuous rain and snow during the next three days converted it into a lake ; but as it was the only bit of flat ground we knew of, it had to suffice.

It was noticeably warmer on this side of the pass, despite the snow ; after dark many moths came into the tent, and we heard an owl hooting. By 11 o'clock we were smothered in cloud once more, and it was raining heavily.

On October 23rd I started up the valley with two Tibetans on an intensive seed-collecting campaign. It was raining at the swamp, but a little higher up a heavy

snowstorm was raging, which made the work more difficult ; nor did the conditions mend next day. However, we collected a lot of seeds of *Rhododendron*, *Primula*, *Willow*, and in fact almost everything we could lay our hands on, including several plants I had not seen before, such as the little rock *Vaccinium* with scarlet berries—K. W. 6249.

Every day large bodies of Mönbas, returning from Pe, crossed the pass, though there were not so many coming up now. From one of them Cawdor secured a bamboo bow, complete with arrows in case. The Mönba bow has a span of 4 feet, and at the end where the string is fastened it is iron shod so that it can be used as a walking-stick. The arrows also, which are 2 feet long, are tipped with iron and a notch is cut in the shaft behind the point so that it will break off and remain in the wound, leaving the deadly aconite with which it is smeared to do its work. Cawdor made the interesting discovery that the bowman wears on his left wrist a bracelet of woven bamboo about 3 inches wide.

The upper valley was now once more wreathed in snow, but its form was unmistakable. From the pass—a mere saddle in a high rocky ridge—to the swamp where our camp was situated, it descends in three enormous steps. The treads of these steps are snowfields for seven or eight months in the year and swamps the rest of the time ; the risers are rocky cliffs, hundreds of feet high, over which the stream tumbles anyhow, cutting its way back until it is sunk in a groove. The glacial U-shape of the valley is very pronounced. The rock is everywhere a black and white banded gneiss, the narrow bands showing the most extraordinary zigzag contortions ; they must have been subjected to terrific pressure after they were formed.

Below our camp were larger boggy flats separated at

longer and longer intervals by short descents until finally the valley became a V-shaped water groove. A big torrent comes in from the north and at the head of its valley is a snow-peak, evidently the one close to the Nam La called Temu Tse. To the south of our camp we occasionally caught sight of a lofty peak crowned by an ice cap, a true glacier it appeared ; but the cliffs which flank the valley are so high and sheer that it is impossible to see over them.

Vast accumulations of rubble, hurled down the cliffs into the valley, had been sorted and cleared, cut through and abandoned, by the ever-rushing torrents ; these drifts have rather masked the old moraines, a process which the overwhelming vegetation has completed.

Usually the north-facing flank of a valley is well wooded, while the south face, being exposed to the sun, is covered with scrub only, or with a thick growth of herbaceous plants. But in the alpine valleys of the Doshong La this was reversed ; it was the sheltered flank which was barren, the south face which was wooded. Nor was the reason far to seek. Here there is so much rain and so little sunshine that woody plants can quite well grow on the south face ; while on the north face the conditions are so arctic and the snow lies so long that very little can grow there at all. Great gravel cones line the foot of the cliff, expanding fanwise into the valley. These are covered below with mats of dwarf Willow and *Lonicera*, or with thickets of *Rhododendron trichocladum* ; and on their flanks, with a rank tangle of tall herbs—giant Umbelliferæ, *Meconopsis*, and other plants. Their tops, however, are quite bare, though the glens, being well sheltered, are filled with bushes.

Had the weather been fine we intended to have gone down the valley on a three days' trip, possibly as far as the Dihang, leaving our camp standing. But the rain



TIBETAN PILGRIMS
Photograph by Lord Cawdor



MÖNBA HUNTERS AT SENGCHEN, TSANGPO GORGE
Photograph by Lord Cawdor

continued and we learnt further that the porters were almost out of food ; unless they returned to Pe for further supplies, October 24th was the latest date to which they could hold out, and on the 25th we should have to recross the pass.

October 24th being moderately fine, however, we seized the opportunity to march down the valley as far as possible ; and after breakfast we started.

Descending the next step, where a wilderness of shrubs and small trees flourished amidst a chaos of boulders, we crossed the torrent from Temu Tse and hugged the north-east flank of the valley, which was here about 600 yards wide. Crossing a marsh, we found ourselves in thickets of the 'Falconeri' Rhododendron, and another whose bristly shoots recalled *R. strigillosum*. Thenceforward new Rhododendrons appeared in ever-increasing numbers.

At first wide boggy pastures alternated with strips of forest, composed chiefly of Abies and Larch, with a bushy undergrowth of Rhododendrons ; these were mostly the scarlet 'Thomsoni,' the pink 'Thomsoni,' and a new species of the 'Grande' type. The path lay not far from the cliff, and we crossed several streams and gravel fans covered with a dense growth of shrubs, including Enkianthus, Rubus, a Lonicera with little polished black fruits like boot buttons, and an extraordinary Rhododendron with bunches of tiny fruits borne on the older wood. In places dense thickets of Bamboo made progress difficult, and the path was everywhere a black bog.

After continuing for several miles and descending over a thousand feet, we got into permanent forest which grew more and more varied as the steep descent continued ; also the trees grew bigger and bigger. Here flourished strange Araliaceæ, a Podophyllum, and other

exotic-looking vegetables ; but at least 50 per cent. of the rain forest was composed of *Rhododendron grande*, a tree 40 feet high, with leaves 2 feet long and 8 inches across. But though we saw hundreds of trees we saw not a single one which had flowered this year. All the big trees—Abies, *Rhododendron grande*, and others, were covered with a thick growth of moss, from which hung down the long straggling shoots of two epiphytic *Rhododendrons*. These were fairly common and I gathered seed of both—K.W. 6250 and K.W. 6251,—as well as of the other species. Moss is a sure sign of perpetual rain. Where there is heavy summer rain followed by a dry or cold season the trees are usually festooned with lichen.

At 2.45 we halted under a cliff, where we saw a number of baboons playing ; it was over four hours since we left camp, and we should barely get back by daylight. This was the nearest we got to the Dihang River.

As already noted, at the Doshong La the narrowest point of the loop is reached, the two limbs of the Tsangpo-Dihang, the one flowing north-east and the other south-west, being about 25 miles apart. Or, to put it in another way, the Himalayan range hereabouts is 25 miles thick and 25,000 feet high. But whereas at Pe the Tsangpo is flowing at an altitude of about 9,700 feet, at Yortong the Dihang is flowing at an altitude of about 2,500 feet. It is not surprising, therefore, that the watershed of the Himalayan range should be unequally placed between the two limbs of the river ; the Doshong La is almost three times as far from the Dihang as it is from the Tsangpo. We, being scarcely more than 8 miles south of the pass, were still 10 miles from the Dihang River.

There is a quaint prophecy amongst the Kongbo Tibetans that Namcha Barwa will one day fall into the Tsangpo gorge and block the river, which will then turn

aside and flow over the Doshong La. This is recorded in a book by some fabulous person whose image may be seen in the little *gompa* at Payi, in Pome.

It took me some time to ascend the valley, as there was much to collect; night had fallen when I reached the torrent and it was raining hard. I made my way in the wet misty darkness over the boulders and reached camp at 6.30, well pleased with the results of the trip. Down below under trees and rocks we saw many Mönbas settling down by their fires for the night; they were on their way back to the Dihang.

It was snowing fast when we got up at 6.30 next morning, and a miserable job it was, standing about in a swamp during a snowstorm, while we rolled up the frozen tents. At last we got off and began the long climb to the pass. I added some seeds of the dwarf cherry (whose fruits were almost black) to the collection and more Orange Bill; and on the way up the steepest cliff I noticed, poking its long thin capsule up through the snow, a *Meconopsis* like the yellow dwarf, *M. Florindæ*; it could hardly be that plant, however, which grows in the forest,—more likely it was the allied *M. lyrata*, known from Sikkim and Burma—I saw only two plants, but saved a little seed—K.W. 6259.

Another plant of which I saved some seed was a lily, possibly the purple-flowered *Nomocharis*, described under K.W. 5809. But it was a much taller plant than that, and occasionally bore two flowers on the stem; besides, it flourished at about 11,000 feet, and the alpine flora of the Doshong La was on the whole very different to that of the high and dry Nyima La. It was therefore difficult to believe that this was *Nomocharis nana* of the Nyima La (K.W. 6232).

It must be remembered that when we crossed the Doshong La on June 29th we did not see a tithe of the

flowers which must colour their slopes in July and August. The upper valley was then still under snow, as of course it was now. Some plants we had since found in seed ; but what dozens we must have missed ! Still we did what we could, and no doubt we skimmed the cream of the flora.

It was heavy going up to the pass, reached at 3 o'clock in the afternoon. But on the other side the weather was brighter, and we soon got out of the snow and into sunshine. One had to be careful to keep to the stamped trail, or one floundered in waist-deep, the snow having drifted and filled up the hollows.

We camped on the glacier flat as before ; it was a fine cold night with the usual frosty blustering wind tearing down the valley, where the flowers slept peacefully in their snowy graves. But we must now leave Pemakö, and returning to our base at Tumbatse, continue our summer travels.

CHAPTER IX

IN THE ASSAM HIMALAYA

The evening of July 4th showed a change in the weather. The rain ceased, the sky cleared like magic, and far down the *rong* to the north we could see the glitter of snow-peaks in mysterious Pome. A break in the rains! and immediately we made arrangements to go next day to the Temo La.

Alas! we were deceived, for next day the rain came down harder than ever, and we reached camp dripping. I have, however, recorded our doings at the Temo La, and after five days and nights of ceaseless rain, we returned to Tumbatse.

On July 17th, still in pouring rain, we left Tumbatse on a second journey to the Himalaya, via the Tang La. Our route lay up the ridge of an ancient moraine one flank of which was covered with grass and flowers, while the other was clothed with a more or less dense growth of Rhododendron,—the Mahogany ‘Triflorum,’ ‘Taliense,’ and ‘Lepidotum.’ This moraine comes to an end in the village street.

We soon entered the Picea-Rhododendron forest where the ascent becomes very steep, so that the pack animals had much ado to keep their feet in the mud. Above the forest we traversed over boulder scree, where blue poppies (*M. Prainiana*) flowered freely, to the head of the valley, and shortly afterwards stood on the Tang La, 14,885 feet. Descending a quarter of

a mile, we camped by an empty bothy, where the transport put up for the night.

The alpine turf here was yellow with a dwarf 'Sikkimensis' Primula (*P. pudibunda*), an alpine form of *M. microdonta*, differing from it chiefly in size. On the drier ground were the three species of dwarf Rhododendron already described from the Temo La, all of them in flower. The strawberry 'Saluenense' was flowering best, the 'Snowball' Anthopogon' and the 'Lapponicum' making a rather poor show. There was also another larger 'Lapponicum' with olive and bronze leaves, which broke over the rocks in waves of purple.

Next day we started down the valley towards the Tsangpo, the transport following a different path along the ridge. 'Joseph's Sikkimensis' Primula (*P. microdonta* var. *violacea*) grew by the wayside, and was here mostly claret-coloured; it is curious how this plant, which occurs in at least five colours, tends to segregate the reds from the blues. Whether these colours will come true from seed or not is another question.

On leaving the moorland we came first into juniper forest, the gnarled trees wrapped in moss; then into bamboo and Rhododendron forest, chiefly the small 'Grande' and the pink-flowered 'Thomsoni,' here a tree conspicuous for its smooth stem showing like lustre-ware beneath the tattered tissue-paper bark; and finally into oak forest, with lichen instead of moss for its dress material. Late in the afternoon we emerged from the forest on to an alp, where stood a single hut. We could now see the Tsangpo flowing towards us, and occasionally Namcha Barwa, indistinct behind the clouds; we also had a good view of the valley which led to the Nam La and observed several glaciers.

After another stiff descent—and in this country it is more tiring to go down than up—we reached the

village of Trube, and learnt that before we could cross the river we must either go down to Gyala, where there is a rope bridge, or up to Pe, where there is a ferry. For the river is here leaping into the great gorge, and is not to be trifled with. We decided to go down to Gyala.

The march down the left bank of the Tsangpo 8 miles to Shingche Chögye took us most of the day, and involved a good deal of climbing up and down. As we penetrated into the sheltered depths of the gorge, we found ourselves in Pine forest, where grew both the large-coned and small-coned pines; elsewhere the steep slopes were covered with bush growth, including species of *Desmodium*, *Hypericum*, *Daphne*, *Barberry*, *Jasmine*, *Rose*, *Bamboo*, *Hydrangea*, *Ceratostigma* and other plants, but nothing to fire the imagination of the plant collector; there were also many twining plants, such as *Codonopsis convolvulacea*, species of *Vitis*, *Schizandra*, *Cucurbita*, and *Clematis*. It was the flora of the glens coming down to the river-side.

A couple of miles from Shingche Chögye we met a deputation sent by the *Depa* to prepare the way before us. They had brought with them, what was much more welcome, a bamboo ewer of beer. It was a good brew, and we quickly emptied that ewer and sent back for more.

Arrived at Shingche Chögye, a collection of poor little temples clapped against the face of the cliff over which a glacier torrent leaps 200 feet into the Tsangpo, we were ushered into a leaky, rickety room, and kept busy till dawn putting up a stout counter-offensive against a night attack by fleas in force. We survived the ordeal, with wounded feelings.

July 20th brought another unpleasant experience—the crossing of the rope bridge. The river here is about

100 yards wide, with great swirls, but no rapids; it was now at flood mark, and whole trees were being swept along by the current. The bridge consists of two separate cables of twisted bamboo, 5 inches in diameter, tied to trees some 50 feet above the river on either bank. On these straddles a solid yoke-shaped wooden rider, with a span of 2 feet; in each leg near the base, a notch is cut, which serves to hold the safety rope in position.

First of all, creepers were cut in the jungle, from which a dozen rings were twisted and threaded over the two ropes; and through these rings was rove a life-line attached to the rider, by which the hauling was to be done. Then a man, tying himself on to the yoke, pulled himself across, carrying the end of the life-line; and the fun began.

It was arranged that we should cross first, as later in the day, with the constant traffic, the rope would begin to sag, and there was risk of a ducking. The ordinary person, after suspending himself from the rider, with his arms free for hauling, and his legs waving ungracefully, works his own passage; but royalty like ourselves were dealt with differently. We had *two* riders, one to support the body, the other to support the ankles; and never did man feel more helpless than I felt, bound hand and foot, suspended by two thin ropes over that great rushing river, and travelling by slow, cruel jerks, which rattled every tooth in my head, towards the distant cliff. However, the men hauled on the rope with a will, singing at their task, and in five minutes the torture was over.

The *Depa* of Gyala himself came down to meet us, bringing refreshments, which were much appreciated after the ordeal; also two fine chestnut horses, on which we rode across cultivated terraces to Heath Robinson

House, a comic barrack whose wooden walls were inclined at all angles. The whole place seemed to be shored up with sticks and tied together with string. Meanwhile we had observed a path following the right bank of the river close to the edge of the water; three jungly-looking men carrying loads were moving amongst the bushes. These men had disappeared by the time we reached the house, but we felt convinced they had just come up through the gorge.

However, the *Depa*, whom we questioned on the subject, swore that there was no path, and that no one ever came up through the gorge: anyone coming from Pemakö, he said, crossed either by the Nam La or the Doshong La. We discovered later that this was more or less true, as the Tibetan authorities have strictly forbidden the tribesmen to enter Kongbo by this route.

The *Depa*, when pressed, admitted that there was a path to Pemakochung, passable, he said, only when the river was low; but this was untrue, as the path is high up the cliff, though why he was so anxious to conceal from us the fact that a path through the gorge did exist we could not understand. We knew of course that Bailey and Morshead had gone down to Pemakochung in 1913. Eventually he changed his tune, and showed us a note written by Major Bailey, guardedly extolling his virtues; he even volunteered to assist us! We made no secret of the fact that we proposed to return to Gyala in November and try to penetrate the gorge; since we had to depend on the *Depa* for food and transport. For the moment, however, we only wanted to go a couple of miles or so downstream to see a rapid which was throwing up great waves at the foot of a cliff where the river changed direction. So we started along the path we had discovered.

Before long we were paddling, the path being under

water; and presently finding the bushes which edged the bank also submerged, we waded out round them till we were waist-deep, this being preferable to hacking our way through the thick growth higher up the slope. However, dusk approached before we reached our objective, so we felt compelled to return; and we reached Heath Robinson House after dark, just as a search party, armed with pine torches, set out to look for us.

We did one useful thing—we marked the water-level on a tree-trunk. Ten days later we returned to Gyala, and made our way along this river-path with ease, not even having to wade; for the water-level had fallen 12 feet! On this occasion we reached the great rapid, only to find an unbridged torrent crossing our track. We searched for a way over without success, then selected a point where we might ford it. However, our two Tibetans flatly refused to accompany us, saying that we should be washed off our feet and swept into the river, where our fate would instantly be sealed. Cawdor and I therefore crossed by ourselves, holding hands, to the delight of the Tibetans, who cheered madly; on the return trip they waded into the water and assisted us.

Having crossed this obstacle, we were no better off, since further progress was almost immediately barred by the cliff above the great rapid. Here we obtained the first of twelve boiling-points taken at water-level in the gorge.

Our objective being the Nam La, the most eastern pass over the Himalayan range, we had next to march some distance upstream. The river here is a wonderful sight, flanked by broad terraces one on top of the other, and broken by furious rapids. It twists violently from side to side, wrenching itself round the spurs, forcing its way by a series of jerks to the north, and at each bend glacier streams enter the river.

Near Trube, where we slept the night, three glacier streams from the snow range are crossed ; the largest glacier—that from Namcha Barwa itself, descends to within 2 miles of the river, and its snout, buried under tons of gravel on which trees grow, is plainly visible up the glen. Formerly these glaciers must have crossed the valley, for their moraines are piled up on the left bank, and have been cut into terraces by the river. It is the glacial boulders which cause such a turmoil in the river-bed, where, at high-water, waves are thrown 20 feet into the air, and the river looks like an angry sea, racing madly down the steep slope into the gorge. The terraces are mostly cultivated and irrigated. Peach, Apple, and Walnut trees are common. The crops are protected by bird scares, consisting of a piece of birch bark, red on one side, silver on the other, kept flat by diagonal struts of bamboo, and suspended from a string ; these move in the slightest breeze.

On July 22nd we started up the mountain from a village called Kyikar, and had a close-up view of Namcha Barwa, though the peak is not so impressive when thus foreshortened. We stood on a terrace, in fallow fields blue with a dwarf *Erytrichium* ; and it was very difficult to believe that this mountain still towered 14,000 feet above our heads ! Entering a forest of larch and golden poplar, the latter discharging a perfect snowstorm of seed, we had to send the ponies back to Kyikar, while the loads were transferred to the backs of men and women. The track now slanted steeply up the flank of the mountain and soon disappeared amongst a wilderness of bushes and fallen trees ; for the forest had been burnt here, and charred trunks lay in all directions. We had to make our own path, since no one had visited the pastures for a year or more. Finally we turned a shoulder and ascending through live forest

and a field of purple lilies, came out into a beautiful meadow, full of violet Primulas, where we camped.

Vast moraines covered with forests of Larch, Picea and Rhododendron, surrounded us. From the foot of one gushed a stream of sparkling water. In the meadow, besides violet Primulas (*P. microdonta*), were clumps of sky-blue poppy (*M. Baileyi*).

Deep down in the glen tree and bush Rhododendrons grew to the exclusion of everything else, the species being: the pink-flowered 'Barbatum,' yellow-flowered 'Souliei,' small 'Grande,' large 'Lacteam,' and another species not before met with, having yellow or possibly orange flowers, and glaucous leaves. It was over, only one or two fading blooms being noticed, but it appeared to be of the 'Cinnabarinum' type. The Mahogany 'Triflorum' and the 'Taliense' were seen only on the drier slopes above the glen.

It was interesting to observe how the various species of Rhododendron had fared in different localities. Thus the Mahogany 'Triflorum' and the 'Taliense,' abundant on both sides of the river, had flowered and seeded well everywhere. The 'Barbatum' and the 'Souliei,' on the other hand, also found on both sides of the river, though they had flowered freely (whence we infer that the previous season had been a favourable one), had restricted the output of seed, and in this forest were particularly shy. The small 'Grande' and the big 'Lacteam' had undoubtedly flowered badly, and seeded worse. But the reasons for failure were not always the same, nor did they necessarily depend on present circumstances.

In nature Rhododendrons rarely flower well for two consecutive years, because a good flowering period, if followed by a heavy seed crop, uses up all the plant's energy; there is none left over for building up next

year's flower-buds. If the plant flowers well this year, but for some reason does not set seed, it may at the same time lay down resting-buds and flower well the following year.

In Tibet we noticed that many bushes flowered well, but seeded badly—the capsules had aborted. This was probably due to lack of cross-pollination, owing to a lack of insects; for the spring of 1924 was wet and cold, perhaps unusually so. By the end of the year, however, these plants had on the stocks a good crop of resting-buds which would bloom in 1925.

Another common cause of failure to produce flowers and seed seems to be due to a plant increasing so rapidly that it oversteps its bounds before the conditions are ripe for it. Thus the big 'Grande,' first seen in Pemakö in October, and again in the upper Tsangpo gorge, in December, though it formed two-thirds of the forest, had not flowered at all here. We saw hundreds of healthy trees without a vestige of flower. It was not till we got down to the lower part of the gorge that we found fruiting specimens. This was probably due to some internal trouble due to the plants spreading beyond its natural environment, because I observed exactly the same thing with the giant *Tsuga*, referred to later. This tree I noticed as far west as Tsela Dzong, and it was abundant in the upper part of the gorge; yet it was not till we were definitely on the southern flank of the snow range that we found cones; and here they were plentiful.

It was the same with the 'Arboreum' *Rhododendron* (K.W. 6311). We passed through forests of this species in the upper part of the gorge, but it was not till we reached the lower gorge that we found it ripening seeds. The inference is that these species, though able to maintain life, are not able to breed under adverse climatic

conditions ; the reproductive, though not the vegetative organs, are affected.

The yellow 'Souliei,' on the other hand, had flowered well enough, but set no seed here because the flowers had been attacked by a fungus which had reduced them to a black pulp.

Next day we continued to scramble over large moraines, covered with forest trees, or with bushes of pink-flowered 'Anthopogon' Rhododendron. Here I found not only the chocolate-flowered *Primula Maximowiczii*, but a yellow-flowered species also, a fragrant Himalayan form of the Chinese *P. szechuanica*. Both species grow 3 feet high with as many as three whorls of flowers, and are so similar in fruit that it is hard to distinguish them ; *P. Maximowiczii*, however, can be recognized by its purple-tinted capsules.

There was another 'Nivalis' Primula growing on beds of moss in the forest, and also higher up in the alpine region ; and though we did not see it in flower, we got seed of it later (K.W. 5973). It may be remarked that the occurrence of so many Primulas of this type, which is poorly represented in Sikkim, but abundantly in China, forges a strong link between the flora of the eastern Himalaya and that of North-west China ; a link which is further strengthened by the discovery of the two 'Maximowiczii' Primulas referred to above. Hitherto the latter type of Primula has been known only from North-west China, 300 miles east of the Tsangpo.

Now came a very steep ascent through Rhododendron forest, the large 'Lacteam' and the 'Grande' below, impenetrable thickets of the small 'Lacteam' above. We also found a single clump of a Rhododendron not previously met with ; the stiff narrow leaves with their buff woolly coat, and the dead corollas still attached

to the furry capsules, suggested a close relationship with *R. Coccinopeplum*.

At last we emerged into the alpine region and camped in a meadow at the foot of the cliffs, and some few hundred feet above a glacier lake, the Nam La Tso.

Opposite to our camp, across the lake, was a fine snow-peak called Temu Tse, from which a glacier crawled half-way down the cliff, and there stopped, as though sliced off with a knife. Further up towards the head of the valley were more snow-peaks, giving birth to four glaciers all of which discharged into one stream; this stream feeds the lake which empties itself down the valley we had ascended, the water flowing under the moraines and finally coming to the surface at their foot, where our lower camp was situated.

In the five days spent here we added considerably to the plant collection, and made the first ascent of the Nam La, though we did not cross the pass.

The most interesting plants from a horticultural point of view were the yellow-flowered *Rhododendron elæagnoides* (K.W. 5994), a fine *Potentilla* (K.W. 5774), which I took to be a form of *P. fruticosa*, despite the very large size of its buttercup-golden flowers, a [*Caragana*, bristling with spines (K.W. 6267), a dwarf *Lonicera* with straw-yellow flowers (K.W. 5988), two rock *Primulas*, and two mossy *Saxifrages*, with leafy stems and single nodding flowers. Others, of little use to horticulture, were, an erect *Codonopsis*, a *Saussurea* from the screes, several species of *Cremanthodium*, *Gentian*, and *Meconopsis*; but we will confine our remarks to those plants which will shortly be seen in our gardens.

The *Potentilla* formed low rounded bushes, massed in the broad gravelly delta of the stream at the lakehead. It was a brave sight, smothered with golden flowers,

an inch in diameter. From its petals the local people make a feeble kind of tea. Near by at the foot of the cliff was a clump of *Caragana* bushes, their bare black snaky stems armed with clusters of pink spines, their leaves edged with long glistening silken hairs. The flowers are pink. On the gneiss cliffs, facing south, were small scraggy plants of a *Rhododendron* bearing pale yellow flowers, which would have been more striking if more abundant; the plants looked unhappy, as though they felt they had no business to be there, and formally protested against it by setting very little seed. It is a form of *R. elæagnoides* from Sikkim.

With it grew the charming little violet-flowered *Primula Baileyana*, a rock plant with a thick coating of snow-white meal so generously applied that it creates a small dust storm when you pluck it. This species is more abundant, however, north of the Tsangpo, and looked almost as unhappy here as did the yellow *Rhododendron*. It is a new species, which I have named in honour of my friend Major Bailey.

Finally, in crevices of the highest cliffs at 16,000 feet, grew a closely allied and even more lovely *Primula*, for its larger mauve flowers are sweetly fragrant. These cliffs, which face south, are composed of a fine banded gneiss and are difficult to climb; a huge cone of rubble has, however, been shot down, and it was in a grassy hollow, between the foot of this cone and a moraine overlooking the lake, that our camp was situated. Streams have ploughed deep furrows in this scree towards the base, whence we obtained our water supply; and the path to the Nam La, after ascending the cliffs by this obvious opening, traverses awkwardly to the head of the valley.

The foot of the slope was packed with dwarf shrubs and flowers. Here grew the best of the creeping

honeysuckles, with large tubular sulphur flowers projecting from paper skirts; clumps of 'mossy' saxifrages, a few inches high, one species with purple, the other with golden flowers, borne singly on the leafy stems; the fragrant dwarf *Primula pudibunda*, the violet-flowered *Meconopsis impedita*, and other plants of botanical rather than of horticultural interest.

As one ascended the scree, however, this flora rapidly dwindled, first the undershrubs, then the herbaceous plants disappearing, to be replaced by certain rock plants,—species of *Saussurea*, *Isopyrum grandiflorum*, various *Umbelliferæ*, *Cruciferæ*, *Saxifrages*, *Gentians*, and dwarf *Primulas*. The highest flowering plant of all was the mauve *Primula* just referred to, which hung in tufts from the cliff crevices, and hence was usually out of reach. By climbing some of the chimneys at the apex of the scree, I secured a specimen, and subsequently a little seed; but the plant is not likely to be hardy with us. It is a rare but widespread species, discovered by Mr. St. George Littledale on his famous journey across Tibet in 1896, and named *P. Littledalei* in his honour (K.W. 6003).

Situated as we were about half-way between the Doshong La and the peak of Namcha Barwa, on the same range, I had naturally expected to find here a flora similar to that of the Doshong La; richer in species perhaps, since the pass was so much higher. It was, therefore, rather a shock to find that it was not only quite different, but much poorer, in woody species at any rate. We found three species of *Rhododendron* at the Nam La not found at the Doshong La, as against fourteen species found at the Doshong La but not at the Nam La. The Doshong La claimed eight *Primulas* for its own, the Nam La six, and the same with other genera, each valley having species peculiar to itself.

And yet the two valleys lay within five miles of each other !

On July 24th, the weather being fine, we decided to visit the Nam La, and ascending the scree by a zigzag path, we made our way up and down across the fluted face of the cliff, and thence across rock chutes to the moraines. Here the going was even worse. After ascending some distance, we crossed a small glacier, and found ourselves at the foot of a steep snow slope which led directly to the pass. It was now fairly late in the afternoon, and it seemed doubtful whether we should be able to reach the pass and get back to camp before dark, as the snow was quite soft ; however, having come so far, we decided to risk it.

Hugging the side of the cliff, as closely as possible,—for we were on a glacier and did not know what the surface under the snow might be like,—we struggled slowly along, sinking in up to our knees at every step, until finally we reached the summit at 4.15, where we rested for quarter of an hour.

We could see nothing on the other side, as the mist was flying up in our faces ; and after taking observations for altitude, we prepared to descend. Throwing caution to the winds, we 'skied' down the steep snow slope, keeping more out on to the glacier, and descended in ten minutes what had taken us three-quarters of an hour to mount. Thence we recrossed the first glacier, which was about 75 yards wide, and scrambling over the moraines, soon reached camp.

Several points were now clear. As reported by the Lama Serap Gyatsho many years ago, the Nam La is under snow all the year round ; in fact, the pass is actually occupied by a glacier, which on the other side is likely to be difficult. It had taken us rather over four hours to reach the pass ; and though it was not

'officially' open, the going would be little, if any, improved at a later date. Therefore, since there was no camping-ground between our present one and the pass, it would be necessary to allow at least six hours to the pass for laden porters, and say two hours to get off the glacier on the other side and reach firewood; a night's bivouac in between, without firewood or water, would be merely uncomfortable in the summer, but it would be fatal in the winter. We could not risk it. As the pass is only open for two months in the year, therefore, we must cross soon or not at all. When we returned to the Nam La in November it was already too late; and though Cawdor did, after a great struggle, reach the pass again and even obtain a boiling-point reading at the top, his report of the conditions was such that we did not feel justified in risking our porters' lives by crossing.

As a matter of fact the Nam La is very little used by the natives of Pemakö, and hardly ever by the Tibetans, though the headman of Kyikar village had been over, and knew all about it. He told us that two days' journey over the pass there is a monastery called Mandalting, where resides a holy hermit; pilgrims from Tibet occasionally visit him, to offer him food. Four days' journey from Mandalting, and close to the Tsangpo, is a Lopa village called Puparang.

One day we walked right round the lake, which is about 4 miles long and half a mile wide. From the other side we had a splendid view of the whole snowy range from Namcha Barwa to Sengdam Pu, with the deep rent in the middle through which the Tsangpo has torn its way. Namcha Barwa, 25,445 feet high, and Gyala Peri, 23,740 feet high, are 14 miles apart. The fourth peak on the Namcha Barwa ridge which runs north-westwards is over 20,000 feet and 8 miles due

south of Gyala Peri. Through this 8-mile gap the Tsangpo tears its way at an altitude of about 8,000 feet, in a gorge which is, therefore, over 10,000 feet deep. There is a notch in the ridge above the lake, and a path leads over into the next valley and so over another col into the Doshong La Valley.

The view to the north-west from the cliff above our camp was also extensive. South of Sengdam Pu are one or two lower snow-peaks with several shrivelled glaciers, forming part of the ridge between the Rong Chu and the Tsangpo; this ridge, as we have seen, is crossed by several passes, the Tang La being plainly visible. Fifty miles away to the north-west, beyond Tongkyuk, was the mighty snow-clad Salween divide, filling the horizon.

On July 28th we broke camp and descending at a good pace, reached Kyikar in the afternoon. There is a hot spring near the top of the terrace, above Kyikar, where people go for a cure.

On the following day we went downstream once more to Gyala. It was a bright sunny day, but hot and sticky in the gorge. At Gyala we had a treat, for we managed to buy a few new potatoes, the first potatoes we had seen for nearly three months; we also got some green peas.

On July 30th we recrossed the rope bridge, and after spending another flea-ridden night in the Shingche Chögye tenement, started straight up the mountain side for the Tro La. This route also, which is very steep, and impossible for pack transport, had been out of commission for a season, owing to the yak epidemic, and the path was quite overgrown. The rain now began again, and we spent two joyless nights under canvas (having lost the way on the second day) before crossing the pass. We were, however, able to observe that this

stream rises in some large glaciers on Sengdam Pu and the snow-peaks to the south.

On August 1st we crossed the pass (15,910 feet) and descended once more to the *rong*, reaching Lunang in the afternoon to find the sun smiling again. On the way down through the forest I found one of the most interesting plants met with throughout the expedition,—a dwarf yellow-flowered *Meconopsis*, allied to the rare *M. lyrata*, which is a blue-flowered species of Sikkim and Yunnan. The latter, a high alpine, is not hardy in Britain, but there seems reasonable probability that this new species will be quite hardy since it comes from a moderate elevation, and is moreover a woodland species. Woodland plants are not subject to such extreme conditions of temperature and atmospheric dryness as those which have to be grown in the open; consequently, this yellow-flowered *M. Florindæ*,—a bright little species growing about 10 inches high, like the big blue-flowered polycarpic *M. Baileyi*, should prove a great acquisition.

We spent the night at Lunang, and dried our clothes, continuing to Tumbatse the following day.

CHAPTER X

A JOURNEY TO THE LOST LAKE

On August 9th we left Tumbatse on a journey of exploration. Our intention was to travel northwards as far as possible, and in that direction we started down the *rong*.

It was a fine summer's day, and as we splashed through the marshes, past acres of yellow Primulas, we could hardly believe we were in Tibet at all. From the prosperous village of Lunang, with its thirty houses and small monastery perched on an ice-scored rock, we looked down the valley to where it suddenly narrowed; then the trees stepped down from the mountains and met on either side, and the overlapping spurs shut off the view. But looking back up the valley one saw the wide sweep of the pastures, walled by sombre forest, and in the centre the towering masts of scattered trees which tried to invade the bog-land.

Below the foot of the Lunang moraine are ponds full of small water-lilies, and presently we crossed the Rong Chu by a wooden bridge and plunged into the forest.

We were now in Pome, the land of the Poba, over whom the central government of Tibet has, till recently, exercised little direct control. But since the present Raja married a noble Lhasa lady, daughter of Tsarong Shape, he has thrown in his lot with the central government, and keeps on good terms with the Dalai Lama. Perhaps his own authority over the wild and reckless Poba wears a little thin towards the confines of his

country ; but it must be remembered that the Poba have good reason to be suspicious of strangers and resentful of interference, since they were so badly beaten up by the Chinese in 1905 ; though they eventually exacted a bloody retribution for this wantonness.

It must inevitably happen in a country such as Tibet, just as it has happened in India, Burma and China, that the original inhabitants, or at any rate, the oldest inhabitants of whom we have record, are driven under cover by the newer conquering immigrants ; this in the days before immigration laws were invented. As the new-comers advance, the weaker people are driven farther and farther back, seeking refuge in the mountains or the forests, where communications are more difficult than on the plains, and good hiding-places abound.

No one would choose such unpromising country of his own free will, except as a last resort, to escape from his enemies, or nowadays to escape taxation. We are therefore justified in regarding the people of the deep and gloomy gorges of South-eastern Tibet as of aboriginal stock, which is where one would naturally search for them rather than on the wide plains which are open to all Asia. Much of the forested country, however, is quite unexplored, so at present we can do no more than indicate probabilities. But it is significant that this country is called Pome, and its inhabitants Poba ; because the Tibetans call their country Pö.

Since we can trace the Tibeto-Burman family from Tibet to Burma in an unbroken line, with the Tibetans in force on the plains at one end, and the Burmans in force on the plains at the other, it is a reasonable inference that they followed this route in their migrations. Indeed we can trace them along two routes, southwards from Tibet,—via the headwaters of the Irrawaddy into

Burma, and via the Brahmaputra and its tributaries into Assam. These two human streams must have diverged somewhere in the dim and misty regions of Pome or Poyul; and one might speculate endlessly on what actually happened. The result is fairly clear. The Irrawaddy column reached the plains of Burma, where they strove with other columns from the east, the Shans and the Talaings, and ultimately prevailed. Of course, some fell by the wayside, and after various marchings and counter-marchings, settled down and hardened into Kachins, Marus, Nungs, and other clans of the upper Irrawaddy jungles.

Did the Brahmaputra column ever reach the plains of Assam or not? We do not know. Assam was occupied about the first century B.C. (so it is believed) by the Kacharis, who are said to have come there from the foot-hills of Sikkim and Bhutan. Whether these people found the Assam plains occupied (and if so, by whom), or whether they were themselves of Tibetan stock, is not known. It is at least equally likely that they were Hindus, and not of Mongolian origin at all. If Assam was at that time occupied, it is possible that it was occupied by people of Tibetan stock who had travelled south via the Dihang and Lohit valleys; on the other hand, it may be that the Pome people, having chosen the worst route, got bogged in the jungle and never reached the plains at all; or that they eventually emerged from the jungle only to find that they had been forestalled on the plains. At any rate, there is nothing now except the Mongolian element in Bengal to show that the Tibeto-Burman family ever reached Assam; though the Abors, Miris, Akas, Daphlas and other uncouth tribes remain behind in the Assam jungle to prove that they tried to.

The difficulty in forming a true idea of the routes

followed in these early migrations is that we look upon the country as it is to-day, instead of trying to picture it as it was then. But the features are always changing, they never are stationary; and in the 5,000 years history goes back, in a mountainous region of excessive rainfall, much may, and indeed does, happen.

A big swift river like the Tsangpo is ever scouring its bed. If it digs down only 3 inches a year, it will dig a bed 1,250 feet deep in that time. If a mountain range is being uplifted only 3 inches a year, it will rise 1,250 feet during the same period. If a glacier is retreating at the rate of 1 foot a year, it will go back nearly a mile, quite far enough to expose a pass, for example. At the same time vegetation and climate are shifting and changing; there is no stability, no finality. Therefore it is misleading to seize upon one factor and regard it alone as changing in an otherwise fixed world.

That evening we reached Chunyima, the first village in Pome, where we were well received by the inhabitants. There was another guest in the house—a servant of the Kanam Raja, or King of Pome. He was a tall, well-built man with a cheerful cherry-red face, and long wavy hair falling loosely over his shoulders like a King Charles' spaniel. His wife, though a Rongpa (that is, an inhabitant of the *rong*), was a pretty woman, but she declined to face the camera. Pome women, unlike Kongbo women, do not lacquer their faces, which is an advantage; for the Kongbo women, ugly enough at the best, look absolutely hideous when their faces are hidden beneath a shining black mask. Perhaps the idea is, or was originally, to make themselves less attractive to men; though it would seem unnecessary. But it is easy for a foreigner to get a prejudiced view of these customs, which are largely conventional; and

a Tibetan girl with a varnished face may be as popular amongst her set as an English girl, chromatic with powder, rouge, and peroxide, is in hers.

We declined the offer of a room in the house, on account of the excessive number of fleas to the square inch, and elected to sleep in a shed which, by unmistakable signs, proclaimed itself the dairy. Fleas seemed nearly as plentiful here as in the main building, though less brisk, possibly depressed by the odour from bacterial milk pails.

On the following day we continued the descent by flights of steps, and the weather being fine, it grew rapidly hotter. By the stream were all kinds of bushes and small trees, such as tree-of-heaven (*Ailanthus*) holly, and *Weigelia*, and the first species of *Enkianthus* met with, and thickets of *Gaultheria* and *Vaccinium*; in the forest were a number of ground orchids, a species of *Podophyllum*, and the dainty twining *Leptocodon gracile*. But these proletarian plants, though interesting in their way, were soon put in the shade by two of the aristocracy, a small *Rhododendron* (K.W. 6069) and a lily (K.W. 6034). The former was in fruit and grew in company with *Vaccinium* on the steep well-drained sunny pine and bracken-clad slope. Not very thrilling perhaps, and yet at the sight of it I whooped with joy.

In May, two days before we reached Tsela Dzong, I had found a 'Virgatum' *Rhododendron* flowering in a bog—just one plant, with one large fragrant pink bloom. It was obviously in the first flight of *Rhododendrons*, and the next thing was to find it in bulk. For three months I searched everywhere without result, and had almost given it up in despair and tried to forget about it, when lo! we had tumbled right on top of its pet preserve! The joy of discovery is, for the botanist, complete; but the plant collector derives more solid

satisfaction from finding the goods in commercial quantity. Though we had never seen the plant in full flower, we received a hint of its qualities; it had bloomed profusely, and every branch was crowded with its rusty-golden capsules filled with straw-coloured seeds. It has the peculiarity of bearing solitary axillary flowers, all up the shoots. Later we found this plant on the rocks and cliffs of the Tsangpo gorge, and all the way up the Po-Tsangpo, one of the commonest *Rhododendrons* from Gyala to Tongkyuk. Its presence in a bog, where we first saw it, was accidental; it is, like other 'Virgatum' *Rhododendrons*, essentially a plant of the pine forest.

The history of the 'Martagon' lily was similar. We had seen a few plants in bud in the Tsangpo gorge near Gyala, in July. Here we found it in quantity, and in full bloom, an exquisite sight. Most of the country we had been through was too dry and possibly too cold for it; as soon as we got down into the pine forest region, below 10,000 feet, it was common, growing on steep gravelly slopes amongst rocks nearly swamped by the bracken. But it does not grow erect unless support is at hand, for when the shining leafy stem has attained a height of 3 or 4 feet, bearing maybe a score of blooms, it lolls gracefully over, surrounded by a halo of fragrance. The flowers are a beautiful shade of pink, closely and evenly spotted with rosy purple. The large scaly bulb grows about 6 inches below the surface.

In December, at the lower end of the Tsangpo gorge, and at an altitude of little more than 5,000 feet, I found a lily in fruit on the steep grassy hills, which is perhaps the same thing; on the other hand, perhaps it isn't.

We now found ourselves on a well-kept and evidently much-used road, for it had been recently repaired at several points where landslides had partially demolished

it. The valley grew rapidly deeper and narrower as the stream increased the grade of its bed, and to avoid falling into the bottom of the V, the path clung to the hillside, descending abruptly in flights of steps when opportunity offered.

Hereabouts we met a pilgrim journeying to Lhasa. He carried his goods and chattels on his back, packed in a bamboo frame, and informed us that he came from Amdo, which is away up in the north-east corner of Tibet, by the blue lake, beyond the land of the Golak. Already he had been five months on the road, having dedicated himself to acquiring a large stock of merit by visiting the holy places. He was suffering from toothache, and was grateful for a little iodine and aspirin which Cawdor gave him.

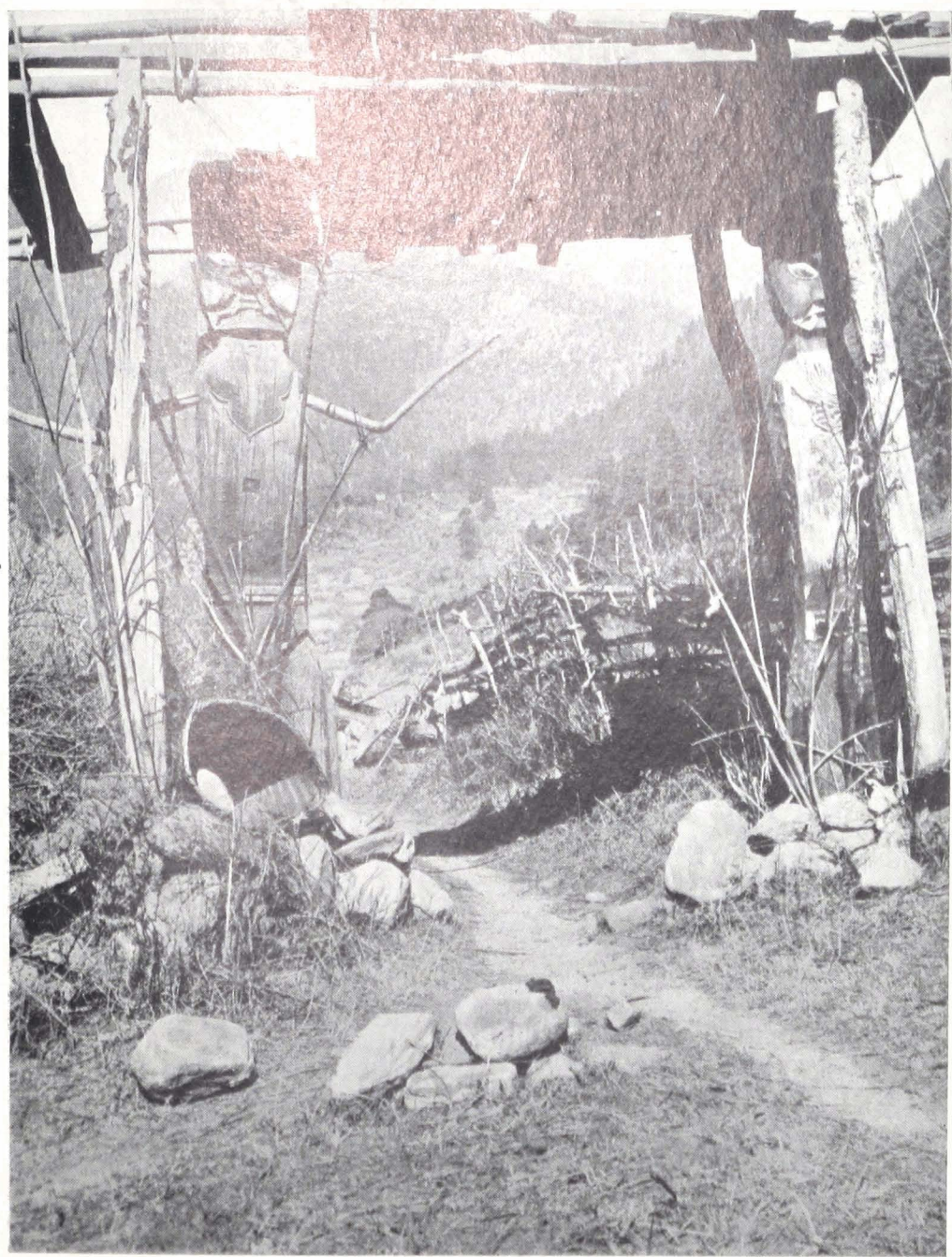
In the course of the afternoon we reached the Tongkyuk River, and turning westwards, crossed it half a mile above the junction by a good bridge.

From there we climbed up to Tongkyuk Dzong, which is perched on a knoll. It is a poor place, consisting only of the barrack-like *dzong* and a shabby monastery, which had been robbed of the few poor treasures it ever possessed by the Chinese. Nominally there were thirty monks attached, but they had dispersed to their homes for the rainy season, leaving only the sacristan in residence.

We pitched our tents in the courtyard, which heavy rain soon after our arrival had converted into a lake; but we preferred death by drowning to death by dyspnoea in the squalid pens which surrounded the yard.

The *Depa* was sick, but the inevitable 'manager' made arrangements for transport, and sold us food.

Next day we descended to the junction of the Rong Chu with the Tongkyuk River. The latter is considerably the bigger, and the grey tinge of the water sug-



ENTRANCE TO A VILLAGE IN POME
From a photograph by Lord Cawdor

gested that it arose amongst glaciers, an observation we were later able to confirm. The altitude at the junction was 8,157 feet.

The short break in the rains was now over, and when we started up the Tongkyuk River on August 12th, it was raining steadily. At the village of Temo, a mile up the valley, two carved wooden images of ogreish aspect guard the approach; they stand 9 feet high, but, being almost legless, are actually much larger. Another pair of these fetishes stood sentinel over the next village, but after that we saw no more.

Crossing the river twice we began to ascend more steeply, and late in the afternoon camped in a wet meadow where stood an empty herds' bothy. In the bed of the river were masses of giant cowslip *Primula (P. Florindæ)*; one I measured sent up a stalk 45 inches high, bearing a hundred-flowered umbel, 6 inches high and 5 inches through!

Above this point the path keeps to the river-bed for a short distance, in order to avoid a cliff. To protect it, river training works have been installed. These comprise a stout wooden palisade backed by a low wall of boulders, behind which a wooden causeway carries the path along the bed of the stream; evidently the bund did not prove sufficiently strong, and the causeway was an afterthought. Anyway, it was under water now.

But roads in Eastern Tibet go where they can, and no sooner had we negotiated these aqueous pitfalls in order to avoid a cliff, than we had to climb hundreds of feet up a cliff by rickety stone stairways in order to avoid a gorge.

On the rocks here we noticed both the purple and yellow-flowered 'Lepidotum' *Rhododendrons* growing together, and within the splash of a cascade, on the almost bare granite slab, was a beautiful *Cyananthus*

(K.W. 6082). From a large mat of pale green finely cut foliage enveloped in long silken hairs which cause it to glisten like spun glass, radiated the cobalt blue trumpet flowers, delicate as crêpe de Chine. Amongst this genus of Campanulaceæ are some very beautiful plants, but they are not easy of cultivation in this country, probably because most of them come from too high an altitude. It must be remembered that plants from very high altitudes—say 15,000 feet and upwards—enjoy a sub-arctic climate, and are hardly likely to flourish in Britain, at least in the south. We rightly reject plants which come from below 5,000 feet in these low latitudes, holding that they need a sub-tropical climate. But the climate of Britain is no more sub-arctic than it is sub-tropical, so why a plant should be expected to thrive in Britain, simply because it comes from a very high altitude, passes the wit of man.

But the *Cyananthus* referred to above is not a high alpine. It was collected at about 11,000 feet, which is a temperate altitude for the latitude; consequently it may thrive, though the long silken hairs are a danger signal.

It was on December 30th when we passed this way a second time that I collected the seed, which has since germinated; there was no snow then, and the plant was shrivelled in the sunshine.

Other plants seen on the cliff here were *Isopyrum grandiflorum* and *Primula pulchelloides*.

For two hours we marched through a wide, almost level boggy valley, which had long ago contained a glacier. North of us, and close by, was a great range of snow-clad peaks, of which we caught a glimpse in December. Patches of dwarf *Rhododendron*, including 'Lapponicum' and 'Anthopogon' species, grew amongst the boulders of a moraine which dammed a

small lake into a side valley ; and in the meadow below I noticed the brilliant 'Saluenense' Rhododendron (K.W. 5828). But of course it was over, and indeed there were not many flowers here, except monkshoods in the woodland, and Primulas by the stream.

It was 7 o'clock before we reached the shelter of Nambu Gompa, a gaunt stone building, three stories high, occupied in summer by both laity and clergy, but deserted in the long cold winter—for it stands at an altitude of 13,503 feet.

There were half a dozen lamas in residence, who looked after the spiritual welfare of the many yak herds scattered up and down the valleys. All this grazing land belongs to the Kanam Raja, whose Master-of-the-Horse was also domiciled under our roof in charge of the royal ponies, which were out at grass.

We stayed a day at the *gompa*, and persuaded the cloth to pray for better weather, which they gladly did since we paid for these masses chanted for the soul of departed summer ; but they failed to resurrect the dead and it continued to rain with unabated vigour.

On August 15th we resumed our march westwards, keeping along the base of the snowy Salween divide, which lay to the north of us ; and passing a glacier lake at the head of the valley, reached the pass called Nambu La, 14,971 feet. In the cold streams was growing a 'Sikkimensis' Primula, with large glossy flowers of rich ruby red, or port-wine colour, softened inside with white meal and wonderfully fragrant ; and on the cliffs above the pass itself, facing north, and in winter buried under an intolerable weight of snow, were several dwarf Rhododendrons, including Scarlet Runner, with a few lingering blooms, and Plum Warner bristling with its dusky plums six weeks after it was over and done with on the Doshong La. It was the

first time we had seen these pluvial *Rhododendrons* north of the Tsangpo.

In winter the dry seeds of the 'Sikkimensis' *Primulas* are jerked out of the tubular parchment-like capsule by the wind, and broadcasted; sometimes the culm itself is snapped off by the weight of the snow. I considered we were lucky, therefore, to get good seed of the fine ruby Sikkimensis (*P. Waltonii*) species when we crossed the Nambu La after three days' snowstorm on January 3rd, for the dead *Primula* stems, almost snowed under, were trembling in the wind. Most of the capsules had long since shed their last seeds, but by collecting a large bunch, sufficient dregs of seed were collected to germinate merrily three months later in England (K.W. 6094).

Nor was this the latest date on which we collected good *Primula* seed, for the seed of the milk and sulphur 'Sikkimensis' *P. microdonta* (K.W. 6117) was not collected till January 11th—also in the snow. The dwarf *Rhododendrons*, however, were another story, and I spent an hour on the cliff above the pass, waist-deep in the drifted snow, trying in vain to locate them, while Cawdor, lying in the snow, tried to get a boiling-point reading on the pass itself; the reflection that I had collected seed of both species on the Doshong La was cold comfort in circumstances which were already cold enough.

Descending 1,000 feet, past a pretty glacier lake, where we noticed several snow-peaks to the south of us, we camped in a meadow below the forest-line.

Next day a surprise awaited us, for we found that the mouth of this valley overhung a much larger valley aligned at right angles to ours; at the head of the large valley was a picturesque lake, the Nam Tso, surrounded by fir-trees, and into this lake flowed a glacier.

Descending the steep lip into the basin-shaped valley we entered upon a quagmire disguised as a meadow, and sank over our ankles before we discovered it, while the ponies had a miserable time. It was interesting to notice how the forest kept clear of this bog-land, though fir-trees (*Abies* sp.) clustered thickly on the gravel mounds which held up the lake at the valley head; another lateral glacier, now defunct, had pushed these across the main valley. The meadow remained almost level, threaded by a sluggish meandering stream, and ceased abruptly when the stream plunged suddenly downhill into the forest at the point where the glacier had ended. That was the odd feature of these glacier valleys north of the Tsangpo; they hardly ever showed any trace of the step structure so characteristic of the glacier valleys on the main Himalayan range—at the Doshong La and Nam La, for example—and in parts of North-west Yunnan. Nevertheless, the distinction between the ice-worn and water-worn portions of the valley was more sharply defined.

We were told that next day we should see a large lake; but no such lake was shown on our maps, though four or five days' journey away a lake called the Pasang Tso was marked. No white man had ever been through this country before.

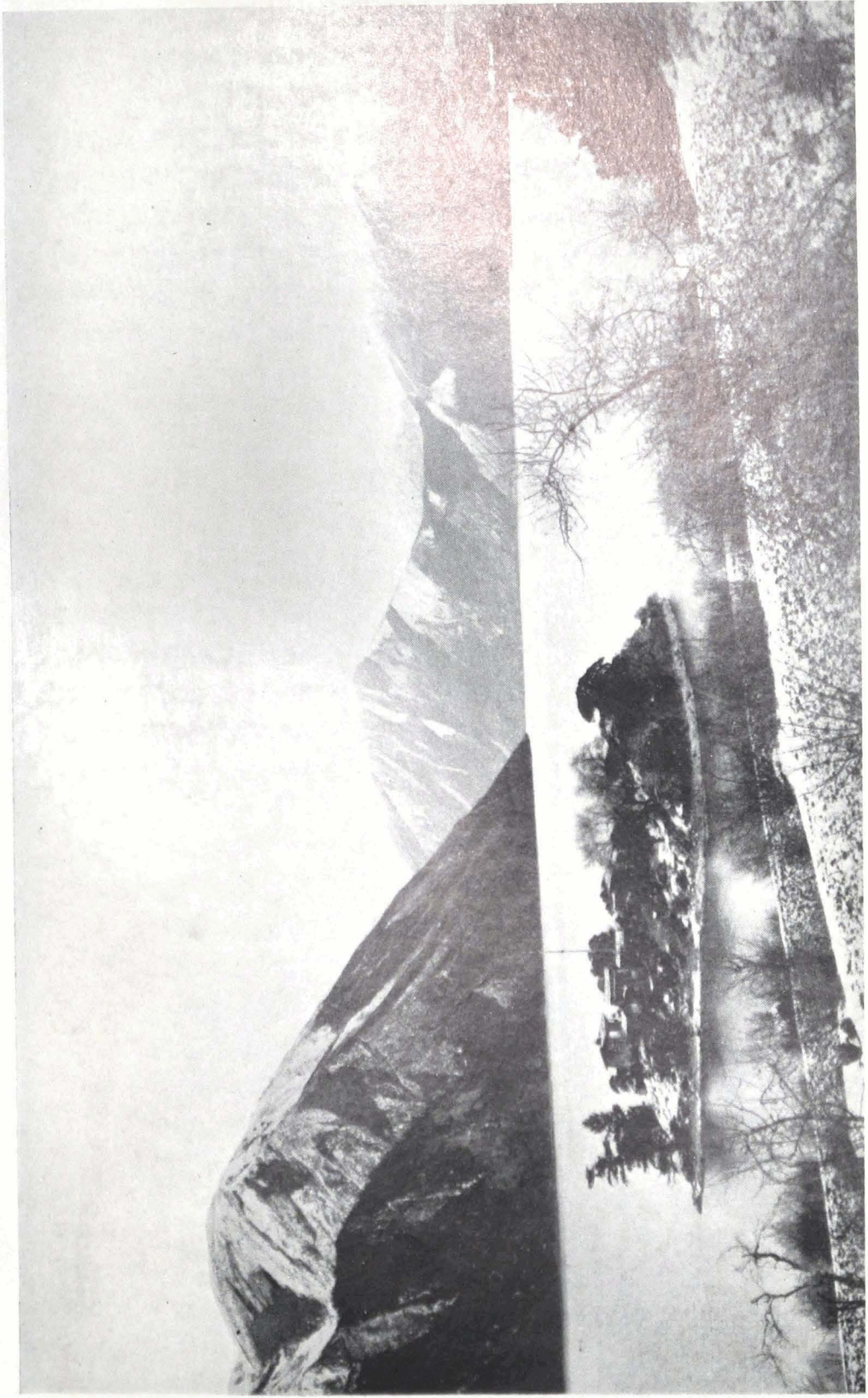
In the afternoon we reached a village called Lö or Lö-pa in a more arid region. The inhabitants showed a surprising lack of joy at our unexpected arrival, regarding us as so highly infectious that we were better isolated in the open under canvas than invited into a house; however, we inoculated them with rupees to such good purpose, that when we passed this way again five months later, they considered themselves out of danger, and swept and garnished the best room in the village to be placed at our disposal.

We could scarcely be surprised that once or twice we were coldly received by the villagers—the wonder was that we were so often warmly welcomed, before our curious mania for paying our way was discovered. After all, they have a wretched time under feudalism. Officials come and go demanding food and transport, which is supplied free gratis and for nothing. Being the custom of the country of course, nobody minds very much. But when strangers who are practically guests of the Government come along expecting the same treatment, that is going a bit too far. Usually our reputation preceded us, and we did no more than we were expected to; but occasionally in some out-of-the-way corner like Lö, nobody had ever heard of us; and though they would not be rude to the guests of their country, they had no intention of putting themselves to great inconvenience on our behalf. Apparently it never entered their heads that we could be so simple as to pay for what we might have had for nothing. People don't.

On the following day they were still indifferent, and the ponies having joined in the general boycott, it was close on noon before we started, despite the energetic action of Tom. However, we had only a short march, and having crossed a large glacier stream from the north, and noticed several snow-peaks and glaciers peeping up on either side of us, we ascended a ridge and saw below us the Pasum Tso.¹ Descending the hillside and crossing a delta of gravel, we reached a village called Je, by the lake-side.

The Pasum Lake occupies a long narrow ice-worn valley between steep mountains. Towards the head are several snow-peaks, the most conspicuous of which

¹ More strictly, according to the spelling, Trasum Tso; but in Eastern Tibet *Tra* is always pronounced *Pa*.



PASUM LAKE WITH MONASTERY ISLAND

is called Namla Karpo. The lake itself is about 10 miles long and 2 miles across, and stands at an altitude of 12,004 feet above sea-level. We had hoped to find a way over the snowy range at the head of the lake, but though two big streams entered here, one from Namla Karpo and one from farther north, there is no pass at the head of either of them ; probably the upper valleys are blocked by glaciers.

On the northern shore of the lake the mountains dip steeply into the water, and the path is carried at some height above the lake level. There is no shore, but there are two or three villages situated in hanging valleys. On the southern side the mountains are not so abrupt, and there is also the mile-wide delta of the Lö River (called the Shingso Chu) and its big tributary the Samtenling Chu, crossed below Lö. On this side the path keeps close to the water the whole way.

Pilgrims gain merit by touring round the lake, and we thought we might as well do the same ; unfortunately we cancelled our merit ration—if we did not positively lay up a stock of unrighteousness—by going round the wrong way.

Marching along the southern shore of the lake in the shade of the woods, where the Geranium-leaved Primula *P. latisecta*—now in fruit—was particularly abundant, we reached a village called Tsogo (‘ lake head ’) standing in a lagoon where a river flowed through wide water-logged pastures, and entered the lake. Just above the village, which was notable for its very tall flag-pole, visible from afar, the river divided, one branch flowing from Namla Karpo, which we could plainly see up the valley, the other and larger stream coming from farther north. Between the two valleys stands another snow-peak called Chomodadzong.

Namla Karpo is admittedly a very fine peak, visible

from the lower end of the lake on a clear day, and from Je too, as a pyramid of snow and ice. The people are justly proud of it, and claim that it is visible from Gyantse, nearly 400 miles distant; but this we can hardly believe.

On August 19th two mounted couriers arrived at Tsogo with a message of welcome to us from the *Dzongpön* of Shoga, an important village down the valley below the foot of the lake. We therefore set out with our escort—who were splendidly dressed in thick cloaks lined with blue, red trousering, long leather riding-boots, and grey Homburg hats—and crossing the river by a bridge, followed the northern shore of the lake. The wide meadow with the lagoon at the end, into which the river flowed from a steep rocky valley a few miles distant, afforded grazing for scores of cattle and ponies.

Close to the lower end of the lake, near the opposite shore, we noticed a small island, on which is built a monastery called Tsosong Gompa. It was noticeable that though both shores of the lake are wooded, it was mostly oak and pine wood along the north shore, *Picea* and birch forest along the south shore; the distinction was even more subtle than that, for here *Primula pulchella* replaced *P. latisecta* seen the previous day. I found also a queer *Lactuca* growing on a scree.

A large and swift torrent has cut a channel through the moraine which blocks the lower end of the lake, and cascades into the valley below. There is a village at the foot of the moraine and a very rickety bridge over the river. Two more servants of the *Dzongpön* met us here, and presented scarves on behalf of their master; to which we made a suitable reply.

Immediately below the valley broadened out into a flat grassy plain, where there was a little cultivation, but not much. Several villages, some in ruins, were seen,

and after marching another another 8 miles we halted for the night at Gyara.

There were two interesting plants in the dry gravelly soil of this valley—a dwarf *Erytrichium* which formed little blue puff-balls, scattered over the fields, and amongst the thorn scrub a large coarse-leaved *Onosma* uncoiling its croziers of violet flowers. There is another and even better species of *Onosma* with pale blue Venetian glass bells occurring lower down the valley, where the soil is more sandy; and those, with the high-tension blue of *Cynoglossum amabile*, are the only nice-looking members of the Boraginaceæ we met with.

On August 20th, we covered the remaining few miles to Shoga Dzong in three hours, and found ourselves at a small village situated in the angle between two considerable streams, the Pasum Chu from the lake, and the Drukla Chu from the north-west.

The *Dzongpön*, who had sent such pleasant greetings to us, was away on urgent business to meet the Commissioner from Gyamda, at Drukla Gompa, a short day's journey up the other branch of the river; and as we were told that we could cross the snowy range by following up this stream to its source, we decided to go on to Drukla Gompa next day.

All this country to the west of the Tsangpo bend is very dry, and we were rapidly approaching plateau conditions again. There was a certain amount of Coniferous forest up the glens, but not a tree in the valley, only bushes and thorn scrub; the further west we went, the drier it became, and of course as soon as we crossed the snowy range we were on the plateau, with not a stick of wood anywhere. Here and there, especially on the sites of ruined villages, are mud towers of curious shape, generally more or less battered, but sometimes in a good state of preservation and as much as 40 or

50 feet high, tapering slightly from the base. They are always in groups, three or four together for mutual support, and we counted several hundred in these rather arid valleys. From a distance they look not unlike factory chimneys, but they are as a matter of fact—or rather were once—watch-towers, hollow inside, and loopholed for defence. Staging was erected inside at various levels—you can still see the holes for the crossbeams, and the garrison could enfilade the attackers on any side.

One account says that these towers were erected by the original inhabitants of Kongbo, when the country was independent, and that they were captured and destroyed by the Tibetans when Kongbo passed under the control of Lhasa. Another account says that they were built by the Tibetans themselves some 200 years ago as a defence against the wild Pobas; though in that case—who pulled them down? Presumably the Pobas—unless of course they fell down.

There is no doubt an element of truth in both versions, which are not difficult to reconcile; after all, the only point of real interest is, who built them? and that is the one thing we don't know. It may be remarked that such towers are common throughout the Tibetan Marches, from Kongbo to Szechuan. In the Mantzu Marches (Yunnan and Szechuan) they are usually octagonal in plan; in Kongbo they are polygonal.

Seeing so many villages in ruins, one supposes that they may date back only some fifteen years to the last Chinese invasion; for the Chinese troops passed through here, and crossed the Nambu La on their way to Pome. But though they did destroy some villages and a great many monasteries, most of the ruined villages date back to an earlier age, when the Tibetans were gradually expanding eastwards from the Lhasa region towards the gorge country; a movement which is still in progress.

CHAPTER XI

THE CRISIS AT DRUKLA MONASTERY

Shoga Dzong comprises several houses placed in the angle between the two streams, at an altitude of 10,597 feet. There is a fine wooden bridge over the Drukla branch, the road to the Gyamda Valley following the right bank of the combined river.

On August 21st, after much delay owing to the absence of authority, we started up the Drukla stream with cattle for transport. Progress was painfully slow, and the valley being well populated, we were further delayed by frequent changes of transport.

About midday we reached a meadow, and saw awaiting us at the other end, a smartly dressed deputation in long cloaks, big riding-boots, and grey Homburg hats ; and as we approached, the *Dzongpön* of Shoga stepped forward. He had ridden out from Drukla to welcome us. We then sat down on the sward, and drank sour milk at his expense.

After mutual expressions of goodwill, the *Dzongpön* and his bodyguard mounted their ponies and jingled off at a fast trot ; while we mounted ours and followed at 2 miles an hour. Presently we turned a corner, the river divided again, and crossing the lesser branch by a bridge we saw in front of us, at the foot of a lofty cliff, the monastery of Drukla.

Ascending the ramparts between rows of silent but curious monks who had collected to see the procession, we were conducted to comfortable rooms and prepared

for the ceremony which we knew was coming. For not only was the *Dzongpön* of Shoga here, but no less a person than the Commissioner from Gyamda, a star of the first magnitude in this firmament.

The Commissioner, the *Dzongpön* and the *Labrang Lama*, or high priest of Drukla, were in consultation over very weighty matters; but the arrival of two such distinguished guests sidetracked them for a moment, and they abandoned the council chamber in order to welcome us.

When we had quenched our thirst with tea and changed our clothes, we requested the pleasure of our distinguished hosts, who came in force—the Commissioner, magnificent in Chinese silks, velvet boots, and scarlet tasselled mandarin's hat; the *Dzongpön*, scarcely less magnificent; the grand lama, a tall ascetic-looking monk, with a heavy jowl, a deeply-lined face, and shorn pate, in his dingy red gown; and a number of smirking minor canons and small bores of rakish not to say villainous aspect.

The presents were numerous and costly—for the recipients. The Commissioner brought a live sheep, a tin of Australian biscuits (I would never have suspected that biscuits were one of the products of Australia but for that happy chance) and two packets of stearin candles, rather moth-eaten. The *Dzongpön* brought eggs and flour; the good old abbot, eggs and flour; the clergy, eggs and flour; (five rupees); the villagers, eggs and flour; (five rupees). When we came to check the rations, we found we had 180 eggs, of which 179 exploded on contact; the one hundred and eightieth was a dud.

To the Commissioner, the *Dzongpön*, and the good old abbot, we responded in kind; electric torches, pocket-knives, a looking-glass, two cakes of soap, and a bath towel found their way into the country houses

of Kongbo. The clergy and the laity, having profited to some purpose, were paid in cash, and went off hugging their true-gotten gear.

We now discovered what all the excitement was about. The minor ornaments of the church had long been indulging in the lusts of the flesh. It was the old story, wine and women. But the New Reformation is coming to Tibet; and suddenly, like a bolt from the blue, civil authority had struck.

‘Immediate expulsion of sixty monks,’ said the Commissioner briskly with that faculty the Oriental in power has for doing something really drastic, and damn the consequences. ‘Theirs not to reason why.’ Sixty monks were chosen, and pushed out into a cold hard world, to our great disgust; we only had to look at them to feel certain that the world would be safer for democracy if they remained safely shut up in a *gompa*. A more desperate-looking lot of gaol-birds we never had seen migrate.

At night we returned the visits of the potentates. As we went down the narrow cobbled lane, towards the Commissioner’s room, we heard the blare of trumpets from behind the thick walls of the black-curtained temple, and the dull soulless rumble of drums. It was now dark, and a man carrying a blazing torch led the way; as we passed beneath the narrow windows of the temple, where service was being held, we could not help feeling sorry for the poor old man, whose children had erred so greatly. Now and then a barefooted monk, muffled in his robe, stole past us in the shadow of the wall, a sinister figure; dark thoughts were passing through their murky minds, no doubt. A cold wind blew from the snow-peaks and its icy touch seemed to warn us that trouble was brewing in this mediæval monastery. But the Commissioner, young, handsome,

debonair, outrode the threatened storm coolly. His bodyguard, fondly fingering their rifles, overawed the most truculent of the banished monks and kept the situation well in hand.

He received us in his well-furnished apartment with a charming smile, spoke of the difficulties of the road, hoped we were comfortable, and thanked us prettily for our presents. A strong silent man was our verdict. We drank sour milk.

Next we visited the *Dzongpön*, who was much agitated at the sentence pronounced against the renegade monks. 'Formerly,' said he, 'Drukla was an important monastery, with 800 monks in residence. Owing to wars with the Pobas, which have continued down to the present day, and to the troubles with the Chinese a few years ago, the number has dwindled to 130, of whom 60 are about to be unfrocked.' Then we drank more sour milk.

Our final visit was to the *Labrang Lama*, who lived in a dim torch-lit room up a steep wooden stairway. He, poor man, had his own troubles, but he welcomed us, and we commiserated with him in his hour of sorrow. Finally, having drunk yet more sour milk with him, we returned to our own rooms. It is only necessary to add that the sentence on the mocking monks was duly carried out; when we returned to Drukla in January, the great monastery was almost deserted.

On the two following days we continued up the Drukla stream, travelling now north-westwards, and passing through a number of villages. There were broad pastures here, but whenever the clouds lifted we could see snow-peaks peeping up behind the grey cliffs and it was evident we were at last getting into the heart of the Salween divide. On the 23rd we reached the last village up this valley, called Pungkar; there is a monas-

tery crowning a cliff, and the stream divides again. There is no bridge over the river, which in flood is not easy to ford ; we had to go a mile above the village in order to cross, and nearly lost a baggage pony in the swift current.

The people of Pungkar hardly knew what to make of us, and reserved judgment, but Cawdor turned the scales very definitely in our favour by healing the sick. When we returned in January, they flocked in force to meet us, and could not do enough for us.

The women in this valley not only blacken their foreheads but also rouge their cheeks, which gives them a slightly inebriated appearance. However, we saw one young lady at Pungkar who had not attempted to paint, and really might have won a prize in a beauty competition, leading to an engagement with the ' pictures.'

Meanwhile we were coming to the end of the forest ; every day in every way the country grew drier, and down by the stream there were only thorn bushes. Flowers were few, but amongst them I noticed *Primula microdonta*, with very fragrant milk-white or pale yellow flowers. This form differed from Joseph's Sikkimensis in that it invariably bore flowers on two or three stories, and occasionally it ran to four. It grew in bogs under bushes in company with the Giant Cowslip *Primula*, but was rarely social ; a plant here and a plant there with perhaps a small colony on a wooded slope.

One result of our leaving the forest country behind was that we were also leaving the rain behind ; and for the next two days we had sunshine. Marching up the valley we noticed wild rhubarb which the men gathered and ate raw ; it was rather sour and had marked effects, which caused considerable discomfort.

All the upper part of the valley was glaciated, and

we passed numerous hanging valleys, crossing the stream twice by wooden bridges. A branch valley leading over the Lachen La to the Yigrong River was pointed out to us. This pass, though about 16,000 feet high, is open most of the year, and is said to be passable for transport animals.

After camping the first night above Pungkar with some herds who lived in black hair tents, we crossed the Salween divide next day by the Pasum Kye La, 17,230 feet, and had a fine view of the snows; though the glaciers have shrunk back so far on this range that one sees more rock than snow.

From a hill 200 feet above the pass, I counted seven blunt-nosed glaciers flowing towards the valley which runs northwards, and three more flowing towards the valley which we had just ascended; and after descending from the pass, I caught sight of four more glaciers coming from another group of peaks. Barren screes and moraines spread in all directions and the alpine flora which had gradually replaced the scrub in the upper valley, was now universal.

Not a bush or an undershrub remained as far as the eye could reach; we were back in the 'bad lands' with yak dung for fuel, and turf, and flowers, but never a stick of wood. For two or three months in the summer there are plenty of flowers. A dwarf prickly poppy, bearing many blooms (*Meconopsis horridula*), was abundant on the moraines, and a violet *Dracocephalum* on the cliffs.

Having crossed the pass, we descended a couple of thousand feet to another yak camp, and halted for the night. Next day, after continuing a few miles, we joined the *Gyalam*, or main road to China, and presently reached a small lake, the Atsa Tso, at an altitude of 14,938 feet. We were now on comparatively familiar

ground, several European travellers having passed this way, including the late General Pereira, only two years previously on his famous journey to Lhasa.

Keeping to the south side of the lake, which is about 3 miles long and three-quarters of a mile wide, we crossed the stream which flows out at the lower end and reached a miserable place called Atsa Gompa, where we halted.

Across the valley to the south is a high rocky range, with several glaciers hidden away in the topmost glens ; while to the north is a lower range, crossed by the Banda La, 18,110 feet, over which goes the road to Lharigo and Chamdo. Thus the river which rises from the Atsa Tso flows through a narrow valley between lofty ranges to the Lhari River, which is the source stream of the Yigrong ; the Yigrong, in fact, rises north of the Salween divide, and cuts its way through the range. The Gyamda River, on the other hand, with its various tributaries, rises on the southern slopes of the Salween divide.

Atsa is a bleak and dreary spot. The wind whistles up these bare valleys, and sudden storms swoop down from the heights. The pastures all down the valley were black with tents and yak now, but in a month or two the shadow of winter would fall on the plateau, and the herds would withdraw. Meanwhile we lived in the tiny temple, and were none too warm there with only an earthenware pot of smouldering yak dung.

An excursion to the Banda La proved full of interest. It is a severe climb, but on a fine day the view is worth it. Far away to the north we saw three very high snow-peaks, Much nearer, in the east, was a fine pyramidal snow-peak, forming part of the southern ridge, the true Tsangpo-Salween divide, on which we counted six dying glaciers.

Considering that we were 16,000 to 18,000 feet above sea-level, the variety of flowers here was quite astonishing. One of the most curious was a gentian (*G. amaena*) with tiny interlocking leaves, and white parchment cups etched with blue. Others we noticed were a crimson *Arenaria* with slate-purple anthers forming mats on the gravel; a dwarf *Incarvillea*, a fat fleshy 'Nivalis' *Primula* in fruit, *Meconopsis horridula* and a yellow-flowered *Meconopsis*, brilliant louseworts, woolly *Saussureas*, dwarf *Delphiniums* with papery flowers which crackled and crinkled in the wind, rosette plants such as *Lactuca* which lie flat on the surface, anchored by an enormously deep tap-root, *Eriophyton Wallichianum* with its purple flowers all tucked away beneath its umbrella leaves, *Corydalis*, chubby and blatant, glowing yellow *Saxifrages*, and bladder campion. Considering the extraordinary hardness of the soil everywhere, it seemed incredible that these plants could penetrate it to the great depths they did and must in search of water.

On August 29th we awoke to find it snowing heavily, the valley full of mist, and the hills all round white; but presently the sun came out, and the snow quickly melted. However, we remained at Atsa another day, while all the evening thunderstorms re-echoed from peak to peak, and the thunder rumbled up and down the glen. Next day we started south by the Lhasa road, having given up the idea of going as far as the Salween, since it was clear it would take us another ten days to get there. Passing round the south side of the lake again, we turned up a wide valley and travelled a few miles to a postal station called Kolep. Before we got there, however, we were struck in the flank by a blizzard, and hurled flat, drenched and breathless. The wind blew the rain through us like grape-shot. The animals could not move, and those which did not get under a neigh-

bouring rock, simply fell down. It was very unpleasant for half an hour, but then the wind ceased and it just rained. We reached Kolep, shivering with cold, but some hot tea soon put us right. There were several tents and a few square cabins here.

On the last day of August we continued up the valley, at the head of which are four small glaciers which feed the stream; this stream from the Tro La joins the one from the Pasum Kye La, and the combined stream flows into the Atsa Lake. The stream which emerges from the lower end of the lake flows, as already noted, to the Yigrong River, which may therefore be said to have its source amongst the glaciers on the north flank of the Tsangpo-Salween divide. The Atsa Tso does not empty into the Pasum Tso, and has no connection with it.

The whole of this region has in the past been very heavily glaciated. Only remnants of the old glaciers survive; but their former extension is plainly indicated by moraines, trough lakes, held up by moraines, straight U-shaped valleys, and other unmistakable signs.

After a stiff climb, we reached the summit of the Tro La, 17,650 feet, where we could see snow-peaks to east and south, and west, but it was too cloudy to observe very much.

Following the usual steep stony path, we rapidly descended 1,500 feet into a wide grassy valley, running north and south. A stream, which had its source in a glacier not more than 6 or 8 miles away, flowed due south, and a herds' camp gave us an excuse to halt and have lunch; for the sun had come out. It seems curious even in August, to be able to lie on the grass at an altitude of 16,000 feet and picnic comfortably, but it must be remembered that at these great altitudes in summer, it is very hot in the sun. One must get out of the wind, of course; and a storm may burst almost

without warning; otherwise it is delightful. But the winters are hard and long, desperately hard and very long, and the wind makes one gasp.

No sooner were we over the range and in the valley, than woody plants reappeared; and by the time we reached Tramdo—a one-house-power village where the postal runners stay the night before crossing the pass—we were almost back in the forest lands.

On September 1st we marched to Laru, after which villages became more frequent; and next day we covered 15 miles and reached Gyamda, during a violent thunderstorm. Gyamda is an important town on the road to Lhasa.

So far we had travelled almost due south from Atsa. The Lhasa road here turns west again, but we had to follow the Gyamda River eastwards, in order to reach Tsela Dzong and Tumbatse.

Gyamda lies in the angle between the two rivers, one from the north, the other from the west, the former being crossed by a wooden bridge. However, we found that the bridge had been swept away by the floods, in consequence of the unprecedented rainfall of 1924. The stream was very swift, but we crossed safely in a coracle, and were quartered in a peculiarly dirty house. Cleanliness seems to be in inverse ratio to the size of the town. Gyamda and Tsetang are both sewage farms, but we stayed in many a lovely country house belonging to some wealthy commoner where everything was clean and wholesome.

There is a post office in Gyamda, and there are also several shops, the best of which is kept by a Nepalese trader. Brick tea, candles, cigarettes, Homburg hats, fur caps, matches, and a few other things may be obtained.

We now turned eastwards down the wide valley, which is, for Kongbo, quite thickly populated. Our

first halting-place was Napo Dzong. Though we did not arrive there till 9 o'clock at night, the *Dzongpön* had table d'hôte waiting for us, and we felt as though we were eating chop suey at the Chinese Restaurant in Limehouse. The room, too, was magnificent. It had glass window-panes, carefully protected with wire-netting outside, and with small curtains inside. The paved yard was a regular flower-show, gay with Hollyhocks, Asters, Sunflowers, Dahlias, Pansies, Geraniums, Roses, Poppies, Brompton Stocks, Tropæolums and other favourites. Clearly the *Dzongpön* was a man of taste, an advanced thinker, and a traveller. He had been to Calcutta and had brought back with him a tin of Sutton's Seeds; hence the Mammoth Show. Besides, the garden there was an orchard full of peach and apple trees.

The suite of rooms, placed at our disposal, were upholstered in the Chinese style, with chairs, tables, and a finely carved and curtained bedstead, fit for an Empress; there were also cabinets, and a painted prayer drum in a pagoda.

Breakfast bore a close resemblance to dinner, the menu including roast yak, toadstool dumplings, sliced hard-boiled eggs, cold pork, and rice, the whole seasoned with vitriolic chili sauce, a drop of which inflamed the tongue to such a pitch that one had to stop eating for five minutes.

For the next two days the journey was uninteresting. We crossed the river to the right bank by a fine cantilever bridge and on the third evening slept at a place called Kangra. Just below, on the left bank of the river, was the little monastery of Namse, where the Shoga Dzong River comes in. Soon after that we crossed a big river from the south, and the valley widened out considerably. Everywhere we saw clusters of towers like those already described.

Ever since leaving Atsa the weather had been dull and wet, with heavy storms from time to time; but though much rain falls here in the summer, the dry season is long and severe, with desiccating winds, and we were still on the extreme outskirts of the forested country. The bottom of the valley is almost treeless, though there is a good deal of thorn scrub by the river. The rocky flanks of the hills are covered with stunted shrubs, and it is only in the glens, and on north slopes well above the valley that one sees real Conifer forest. Already there were signs of autumn in the air, and we noticed some pretty combinations of colour, such as the scarlet berries of *Cotoneaster* against the grey flannelly foliage of *Buddleia*, the silver shocks and ochre felt flowers of *Clematis* rippling over the fiery orange berries of *Lonicera*.

Amongst a few notable flowers were some fine clumps of pale violet *Salvia* and a magnificent blue gentian of which I shall speak later. In one village we noticed a clump of orange and black tiger lilies, almost certainly the far-eastern *L. tigrinum*, and probably introduced by the Chinese; at least we saw it nowhere else. It was no uncommon sight to see bunches of flowers placed in vases on private family shrines, and even in monasteries.

September 7th was a beautiful day, and we marched through charming scenery, all craggy cliffs and pine forest, and the river smothered by bushes. The road, too, was unusually good. That night we slept in a baronial castle called Nyalu.

In Kongbo a sort of feudal system prevails. The country is divided up into a number of territories belonging to the barons or land-owning class. Theoretically these barons are subject to the district magistrate or *Dzongpön*, but in practice they are almost as

powerful and autocratic as he is, and are generally wealthier. Every *Dzongpön* spends as much of his time as possible in Lhasa ; but the barons are more often to be found on their land. They are the great capitalists of the country, carrying on trade and agriculture, and financing local industries. The baron's fort usually stands by itself apart from a village, though there are usually one or two minor rich men in each village ; and the contrast between the castle and the villein's house is great. The serfs live in the castle, and are fed and clothed by their lord.

At Nyalu, for instance, there was the great solid three-storied house built on a raised terrace with its stone-flagged courtyard surrounded by a high wall. Ladders led from one gallery to another, which could be closed by heavy wooden trap-doors, studded with iron nails. There were kitchens and store-rooms, the private chapel with its complement of two or three lamas always praying, sleeping apartments, gun-room, and wide galleries. Down below were the stables. Fierce dogs guard the doorways. The people work on the land, or in the house, weaving cloth, or sewing leather boots ; caravans are sent out carrying the produce of the farm, and bringing back the produce of other regions.

On September 8th the valley began to sweep round from east to south, and in the evening we had a glimpse of the snow-clad Himalaya beyond the Tsangpo junction. A fairly long march brought us to Chomo Dzong, an important but rather neglected place, with a small monastery. In the gravel and sand of the valley floor we saw acres of the little glassy blue *Onosma* and of the larger hoary species, and I collected seed of both, supplemented by more later, as I was not certain whether it was quite ripe. Mixed with them were the

more vivid china blue *Cynoglossum amabile* and the blue powder-puffs of the dwarf *Erytrichium*. Rhododendrons had reappeared after we crossed the Tro La. Indeed below Gyamda one of the bushy 'Lapponicums' was in full bloom. In these pine woods the 'Triflorum' replaces the 'Virgatum' of lower altitudes and the 'Taliense' is common in the thickets which cover the more sheltered slopes.

Below Chomo Dzong the valley widens out to more than a mile, and many villages, scattered houses, and small monasteries are seen. Some miles away, the white walls of Tsela Dzong, crowning the spur at the junction of the Gyamda River with the Tsangpo, are distinctly visible; we arrived there on the 10th and halted a day. Most of the flowers were over, but the sunny slopes were blue with *Ceratostigma*.

The Tsangpo was now falling fast, and the sandbanks were emerging again, though the 2-mile wide mouth of the Gyamda River was still mainly water.

We floated by coracle downstream to Temo, and retraced our steps over the Temo La, halting there for the third time; but again it rained without ceasing, and we were glad to return to Tumbatse, reached on September 15th, after an absence of just over five weeks.

The geographical results of this journey may be briefly summarized. In the first place we had crossed two important new passes, the Nambu La and the Pasum Kye La, and had discovered that unless one goes through the province of Pome, or up the Yigrong River, it is necessary to go a long way west before reaching another pass over the Salween divide. The route via the Pasum Lake marked on the map we found to have no real existence, and as the lake itself is shown 30 miles out of position, this was not surprising.

We had been able to place on the map the important Dzongs of Shoga, Napo, and Chomo ; and to straighten out the course of the Gyamda River and its large northern tributaries, the Pasum and Drukla streams, all of which were in a sad muddle. Finally, we had discovered the monastery of Drukla.

In the country which had been crossed by previous travellers, namely that from the Banda La to Gyamda, we had established the fact that the Atsa Lake lies to the north of the Salween divide, and discharges into the Yigrong River through that great snowy range and not into the Pasum Lake.

CHAPTER XII

AUTUMN COLOURS

We remained three days at Tumbatse, and I secured the temporary services of an intelligent villager to help me collect seeds. *Primula chungensis*, *P. tibetica*, *P. Florindæ*, *P. microdonta*, *Meconopsis Baileyi*, *Cyananthus lobatus* and Iris were all collected, besides the orange berries of the best *Lonicera*. The weather was showery with intervals of sunshine; but we expected the fine weather to begin any day.

We had two months in which to collect our seeds, and four passes to visit, two north of the Tsangpo and two south of the Tsangpo, on the Himalayan range; the latter could not be left till very late because it begins snowing heavily on Namcha Barwa in October, and everything would be buried by November. It would be better, we thought, to finish the Temo La by the first week in October, cross the Tsangpo and collect on the Doshong La for a fortnight in October, leaving the Nam La, which though more lofty, has much less snow, till the last. We could then start through the gorge, without having to return to Tumbatse.

Generally speaking, unless plants are entirely buried under the snow, one can gather seed of them up to Christmas. The collector is apt to forget this, and think that he will lose his plants through not being able to get there till too late. The temptation is, therefore, to collect seed before it is ripe, rather than run the risk of losing it.

We worked out a programme which proved successful ; but I had several frights before all the good things were harvested.

On September 19th we moved into camp on the Tang La, and in the course of a week collected seed of *Meconopsis impedita*, *M. simplicifolia* and the two *Aculeatæ* ; *Primula sino-purpurea*, *P. ninguida*, *P. rigida*, *P. atrodentata*, *P. Walshii*, *P. pudibunda*, and one of the many coloured forms of *P. microdonta* ; and the dwarf *Lloydia*.

The weather was terrible, with driving rain and hail, which had in it the sting of winter. Not once did we get a clear view of the snows, though the sugar-loaf cone of Namcha Barwa appeared floating on a cotton-wool sea one evening. So high is it that it not infrequently pierces the clouds.

A few Saxifrages, Swertias, and Aconites were in flower, and in the upper forest were several untidy *Compositæ*.

A mail arrived to relieve the tedium of isolation, and we derived much satisfaction from reading newspapers two and three months old ; but most of them broke off at a crisis, and we were left with the tantalizing legend ' to be continued in our next.'

On the 25th we returned to Tumbatse, and next day I dashed off down the *rong* to Lunang and turning up the path which goes to the Tro La, reached the herds' bothy where the dwarf yellow woodland *Meconopsis* grew. The seeds were nicely ripe, and I collected several hundred plants on the wooded banks. We slept the night in the forest, and then returned to Lunang and Tumbatse, collecting seed of the cherry and two species of *Lonicera en route*. It poured with rain all the time, and the *rong* was such a bog it was difficult for the ponies to get along at all. The river was overflowing too.

On September 28th a message arrived from Lhasa requesting us to send to the Tibetan Government seeds of any flowers which they might be able to raise. The Dalai Lama is very fond of flowers, and at his private residence, called Norpu Lingka, or the Jewel Park, on the outskirts of Lhasa, grows a great many, which he tends with loving care. Naturally we were delighted to have this means of expressing in some degree our thanks to the Tibetan Government, and particularly to His Holiness, for permitting us to reside and travel in Tibet; and I dispatched to Lhasa seeds of nearly forty species of Primula, Meconopsis and other showy flowers which could be easily raised. In years to come it may be that Englishmen will see these rare plants growing in Lhasa gardens.

During the next few days I had plenty of work to do packing seeds, and on September 30th we started for the Temo La; this was to be our last trip north of the Tsangpo, before starting for the gorge.

As luck would have it the day was fine and the forest was lit by the lurid glow of scarlet, orange and champagne-yellow leaves. Sending the transport round by the main route, we followed a yak trail straight up the mountain, and when we reached the alpine moorland, traversed over hill and dale to the pass. But it was farther than it looked, and towards evening a very cold wind blew over the bleak mountains. Mist and rain rolled up the valleys, and it was dark when we stood on the last col, drenched and chilled. However, we could just make out the glow of a fire far down the valley, and we arrived in camp at half-past six, going dead slow over the rough on account of an almost impenetrable mist, to drink cup after cup of scalding tea. In the night the rain turned to snow, but this soon melted again.

So far we had collected no *Rhododendron* seeds, and the position was a little delicate. Most of the *Rhododendrons* found on the north bank of the Tsangpo are found also on the south bank, but neither so abundantly nor in such fine feather. It would be much better to collect the dry winter species on the north bank, than the moist winter species on the south bank; especially as we could not count on finding every species again, once we had crossed the river. Two or three species certainly were to be found—so far as our experience went at any rate—*only* on the north bank; for example, the rose-purple ‘*Oreotrephes*.’ But it is a waste of time to collect *Rhododendron* seeds before October, and it is safer to leave them till the middle of the month, and give them the chance of a little autumn sunshine. On the other hand, while one can if necessary leave *Primula* and *Meconopsis* till Christmas, and still be sure of saving seed, so long as the plants themselves are fairly common, no such liberty can be taken with *Rhododendron*. A fortnight of fine dry weather in November, and they open wide their wooden capsules; a breath of wind and poof! away go the seeds like dust. The danger of snow on the moist-winter ranges has already been referred to, and we were soon to have a lively experience of its ravages.

Our programme, which in view of the bad weather we dared not modify—for rain here meant snow on the Doshong La—included the evacuation of Tumbatse not later than October 11th, and camp on the Doshong La not later than the 15th. It will be seen, therefore, that the *Rhododendron* problem was urgent.

From the Temo La we marched round the head of the valley to our old camp at the Sung La, where we spent the next three days. The weather was what the newspapers called unsettled; that is to say, when it

wasn't raining it was snowing. We collected seed of the two large yellow poppies, *Primula philoresia*, a *Lloydia*, and two dwarf gentians, besides adding to our holdings in other alpine. A twiggy honeysuckle (*L. cyanocarpa*?) which was woven into the dwarf *Rhododendron* carpet and whose stock in flower was below par, now showed a surprising recovery; for its bare twigs were studded all over with blue-blackberries like large sloes (K.W. 5918).

On October 4th we returned to the Temo La, and that evening, following a heavy hailstorm, the great snow range, stripped of every shred of cloud, stood out as bold as sugar-candy. Try and picture the scene! We stood on a range of mountains 15,000 feet above sea-level, looking eastwards across the narrow wooded valley of the Rong Chu; immediately beyond that a rocky range, 15,000 to 17,000 feet high, notched by the Nyima La, stretched across our horizon. Above that again, and only 25 miles from where we stood, rose the great snow barrier, broadside on. Its southern sentinel peak, Namcha Barwa is over 25,000 feet high; its northern sentinel peak, Gyala Peri, over 23,000 feet high. Between the two are four other peaks over 20,000 feet high, and the whole fills 15 miles of horizon, with the rock range lying crouched at its feet.

Anyone coming from the north, knowing nothing about the Tsangpo, and descending eastwards to find it flowing northwards, would be bound to think that it skirted along the edge of that mighty barrier, flowing northwards indefinitely. Or, if he descended to the south and came upon the river flowing east, he would say that it must turn south before it reached Namcha Barwa. And yet both would be wrong. The river, as we have seen, does turn northwards by Namcha Barwa, seeking a way of escape; but finding none, after flowing

for two-thirds the length of the snow range, it turns on it and rends a passage through.

From where we stood it was impossible to believe that the snowy range was not solidly continuous; and yet we knew that the river pierced its heart, breaking through within 5 miles of Gyala Peri, and within 10 of Namcha Barwa. There is indeed a gap here, and far away a distant snow-peak showed up like a sabre tooth. That night it froze sharply under a clear sky and the snowy range gleamed hard and cruel in the cold moonlight. It was a marvellous dawn, but no sooner was the sun up than clouds began to threaten, and before 10 o'clock the panorama was ruined.

However, I fondly imagined that the sky would clear again towards evening, and went off to climb a mountain whence I could get a more extensive view. Here I spent a cold night, without much result, as recorded in Chapter V.

Back in camp on October 6th, we only stayed long enough to have breakfast and pack; in the afternoon we started down, presently camping again in a meadow, where we collected seed of *Primula pseudocapitata*, the best Barberry, a willow, and several Rhododendrons.

On the following day we continued the descent to the *rong* and rode as quickly as possible down the valley to Tumbatse. There was no time to waste, as we intended to leave in three days. Stores for the return journey and our plant collections were packed and left at Tumbatse, to be picked up by Dick and Sunny Jim later.

The rain still kept on, but not so continuously as in the summer. Every day I went out after seeds, assisted by two small boys who showed symptoms of intelligence. In one glen I found the prize honeysuckle (K.W. 5776) fairly abundant and fruiting well; it requires shade and ample moisture to ripen its fruits. As usual, many

plants were verminous. We picked scores of desiccated grubs from amongst the seeds of *Meconopsis impedita*, both seeds and grubs dropping out as the capsules dried ; of course it would not do to pack up the grubs with the seeds, so they had to be picked out by hand first. The two alpine Aculeate poppies were also bugulous. Despite this destruction of potential plants, *M. impedita* is by far the most abundant and widespread of the alpine poppies in Kongbo—indeed the species is found nearly 400 miles to the east, in Western China. What part then do the grubs play ? True, the insects which produce the grubs must keep in contact with the plants at whose expense *their* offspring will thrive ; and in order to make certain that there shall be food—seeds—for those offspring, they may, deliberately or unconsciously, pollinate the flowers. But the two Aculeate poppies set plenty of good seed, though they are not nearly so common. Neither are *M. simplicifolia*, nor the big yellow poppy, though both set abundant seed, and therefore are pollinated ; but they do not feed a private staff to do the work. Thus it is difficult to connect the abundance of *M. impedita* with the grubs in the capsules.

The seed collector, however, soon finds that nearly all seeds are fair game for army corps of spongers, which may or may not make some return to the plant. This is particularly true of the tropical forest, where the struggle for existence is most bitter ; but it is also true of the chill alpine regions, where the struggle with conditions increases in proportion as internecine warfare decreases. Thus the collector has much to cope with, besides distances and climate. His plants may fail to set seed at all, or the bulk of the seed may be destroyed or scattered before he comes on the scene. Then the seed has to pass through the tropics and make a sea voyage,

and it may be anything from three to five months before it can be sown in England.

We sent home seed of about 250 species, the earliest collected in September, 1924, the latest in February, 1925. Most of them were gathered in the snow, and faced over 40° of frost on the Tibetan Plateau during the return journey. They then passed through India, facing a temperature of over 90° F. It is not to be supposed that the seeds actually withstood a range of temperature which exceeded 130° F. Indeed, it was my business to see that they were not subjected to this intolerable strain. The bulk of them were placed in envelopes and packed with plenty of paper in tins which were then soldered down. Arrived in India, these tins were put in cold storage on board the ship and travelled home so. A great many seeds were also brought home in thermos flasks—sample packets of all the best species were carried in this way; and though I do not pretend that these were maintained at a constant temperature throughout, the change must have been a gradual one, nor would the heat be so hot, nor the cold so cold, under these conditions.

The first lot of seeds reached England on March 20th, and were distributed and planted immediately. The last lot arrived on April 20th, and before the end of the month all the seeds had been planted at Kew, at Edinburgh, at Wisley, and in a hundred other gardens in Britain. Seeds were also promptly dispatched to New Zealand, South and East Africa, South and North America, and elsewhere.

At the time of writing, out of over 250 species, about 2 per cent. have failed to germinate; but there is every reason to suppose that some of these will germinate next year.

Summer was now over and with scarcely a halt winter

was surging down on us. On the 11th we started for the Tsangpo, crossing the Nyima La and camping on the other side of the pass. Next day, the snow-peaks still being invisible, I started to collect *Rhododendron* seed. Purple 'Lapponicum,' strawberry 'Saluenense' and snow-white 'Anthopogon' were gathered, also the purple *Nomocharis nana*, *Primula atricapilla* and *P. Cawdoriana*, and two beautiful little Saxifrages. Quite 75 per cent. of the capsules of the 'Saluenense,' which had flowered so freely, were bad, destroyed by a fungus. A worse blow followed; for of three Ivory Poppies marked down here, not one had set seed!

We went down the glen next day, collecting *Rhododendron* and other seeds *en route*. We could find only two plants of the big chocolate-flowered *P. Maximowiczii*, the Geranium *Primula (P. latisecta)* had sulked and set no seed, and the best *Rhododendron*, the rosy-purple 'Oreotrephes,' was not ripe. I sent Dick back for seed of the last-named three weeks later, with satisfactory results, and the Geranium *Primula* was collected by the Pasum Lake in January, though the available supply of seed was, by that time, scanty.

We halted for the night at the first house, on the scrub-clad slope, just below the forest. The capsules of the 'Taliense' and 'Triflorum' *Rhododendron* were fully ripe here, and the small leaves of the 'Lepidotum' turning brave colours. On the dry bank under the oak scrub, *Primula pulchelloides* and the large *Androsace* were seeding, and here too grew masses of a magnificent gentian, *G. Waltonii*, which recalls *G. asclepiadæa*, though its flowers are more numerous and of a more incisive blue. There was a great sprawling rosette of dark green shining leaves from the centre of which sprang several leafy columns bearing so great a burden of upright blue cups that they bent under the weight and

flopped over. Nests of amazing blueness lay gleaming icily there on the dry sun-baked gravel, soaking up heat and light ; and three weeks later Dick collected seed of this, the finest gentian known to me (K.W. 6221).

We crossed the Tsangpo by canoe, and rode to Pe, where we found great activity. The tribesmen were coming over the Doshong La from Pemakö for salt, bringing in exchange rice, maize, canes, and curry ; the canes are cut up and used for whip-stocks. A Government official was at the receipt of custom, taking over the produce and giving out salt in exchange. Besides trading, the people were paying their annual tax. Every family pays a tax in kind, according to its wealth ; the poorest pay 14 *seer* of rice. The produce goes half to Tsela Dzong and half to Tongkyuk, both Kongbo and Pome claiming rights in Pemakö. But the tax is levied only by the Kanam Raja, or King of Pome, whose representative was also at Pe. Pome, however, now owes allegiance to Lhasa, and since taxation has gone up in Tibet, much to the disgust of the Mönbas, there has been a good deal of dissatisfaction in jungle circles. The salt which these people take back with them has already travelled far, having come from Central or Western Tibet. But many of the people themselves have come long journeys, carrying loads which weigh 70 or 80 lb. Even small children carry 20 or 30 lb. loads. Most of the people we saw in Pe were Mönbas, a few Kampas. But most interesting of all were three Lopas, as the Tibetans call the most surly, savage and benighted of the Assam tribes. These dwarfs (they stood less than 5 feet high) had come twenty-five marches to buy salt, and were evidently the folk we call Abors.

It was surprising enough that such small, ill-nourished men should carry loads weighing 80 lb. over tracks that would break a white man's heart ; but to have crossed

the Doshong La in deep snow, almost naked, was even more astonishing! For the only garment they wore was a coarse red-dyed shirt of hand-woven cloth, not reaching to the knees, with a small flap beneath for decency's sake! Just imagine it! Bare legs, bare feet, bare hands, bare heads, in that bitter wind! A second garment, like a Tibetan *gushuk*, is worn at night. With such heavy loads they can only travel very slowly. Indeed, while we ourselves were in camp on the Doshong La, they tried to cross the pass, but were driven back by a fresh fall of snow; the wonder is they did not perish outright. Instead, they hid in the forest for a day, and then, when the storm was over, crossed safely!

These Abors knew no word of Tibetan, and all the resources of the local interpreter were strained to hold a brief conversation with them. They were suspicious of us and surly, scowling at our advances. Their shifty eyes, low bulging forehead, and projecting muzzle gave them a dreadful ape-man look; one wonders if even Neanderthal man looked so utterly simian—if so, he must have been an ugly customer!

For ornament, these Lopas wear bead and chain necklaces and large hollow silver ear-rings, like a back collar stud the size of a half-crown and an inch through. A short chopping knife is carried in a basket sheath round the waist, and a bamboo bow with bamboo string and poisoned arrows. We bought an ear-ring for two rupees, but it was evident that they did not want the money; they did not know what it was or what to do with it; an empty sardine tin was more coveted! The Mönbas and Kampas were very different; and though obviously uncertain of our intentions, they made friendly advances and were glad to sell us their wares—neat little baskets of woven bamboo, beer jugs covered with coloured matting, garters, and other hand-made articles, they brought over

with their jungle produce. Cawdor, who was very keen on all these tribes, their manners, customs, arts, and crafts, made quite a good collection of native articles; he also wrote exhaustive notes on everything concerning them. This was particularly interesting to me because his knowledge and keen eye for detail enabled him to draw my attention to lots of things about them which I should otherwise have missed.

The village being full, we camped in a grove of trees hard by and next morning started up the valley for the Doshong La. Masses of coloured leaves—Viburnum, Rowan, and Birch—illuminated the dark forest like the burning bush, and we collected many seeds. Arrived at our old camping-ground, now more swamped than ever, we had a quick lunch, and while the men were pitching the tents, climbed up to the glacier flat to reconnoitre. The place was a marsh, but we selected a knoll in the centre for a camp. Where massed Rhododendrons did not crowd every square foot of ground, grew two species of Vaccinium, whose blue-black berries were good eating. I also found in fruit here a Rhododendron not seen in flower (K.W. 5861), and on the sheltered cliff in dense thickets of 'Lacteam' and 'Souliei' another new species (K.W. 6229).

This was all very well, but I got a nasty jolt none the less. Just here we met the wind rushing over the pass, driving a heavy spray before it; a thousand feet higher up where our gem Rhododendrons cowered, snow was falling fast. As though to reassure us that the job was really going to be a difficult one, I found that nearly all the seeds from the one known clump of Golden Primula (*P. Morsheadiana*) had been sluiced out of the open capsules, while the solitary clump of Daffodil Primula (*P. falcifolia*) yielded no seed at all! I spent an hour searching the bog for more Golden Primula,

and found several unsuspected plants under the bushes ; but they had all lost their heads !

It was now raining harder than ever, besides being very cold, and as it was getting late, we decided to return to camp. All that evening scuds continued to sweep down the valley, washing out the stars, which twenty minutes later would be shining brilliantly again ; but I spent a sleepless night.

We had intended to move our camp to the glacier flat next day (October 16th), but the porters, who evidently did not want to go, strolled in late, and blandly informed us that they had finished their food. We made the best of a bad job, sent half of them down to Pe with instructions to bring back rations for a fortnight, kept a firm eye on the other half, and sat tight. After all, it was terrible weather—bitter wind with driving rain—and if there was one thing we needed for the alps it was fine weather. We had yet to learn that it never is dry at the Doshong La. I went out seed collecting and was lucky enough to find in fruit a ‘*Barbatum*’ *Rhododendron* of unusual habit, forming a close-set twisted scrub on the gneissic cliff (K.W. 6223). Growing beneath it there was in fruit a mossy *Diapensia*, bristling with long quills each of which ended in a red beak ; these red beaks turned black before they split (K.W. 6226).

It was now high time to start collecting *Rhododendron* seed and half a dozen species were gathered, including the purple ‘*Saluenense*.’ Now that autumn had picked out the broad-leafed trees, the dark wall of fir forest was smudged with the hot stain of death—gamboge and vermilion and old gold ; but the undergrowth was already rotten and downtrodden. On October 17th the porters came early, so we broke camp and climbed to the glacier flat, where we camped on our

knoll ; but I went on up the thousand-foot step to the alpine valley, anxious to know the worst. On the way up I found a lot of Golden Primula capsules full of seed, which put me in good heart, and also collected some Barberry and Lonicera berries ; but it was Rhododendrons I wanted chiefly.

Deep snow covered the valley, and save for the howling wind an awful silence brooded over a desolate world. Almost in despair I set to work madly digging in the snow, and in two hours had excavated some capsules of Scarlet Pimpernel, Pink Glaucum, a yellow Anthopogon, and the pink Campylogynum.

That night the wind hummed over the pass, threatening to uproot the tents, and filling the air with fine snow dust. All the next day it continued to blow a regular blizzard, with driving snow ; but early in the afternoon the snow ceased, the sun came out and I raced up the valley to collect seeds. Luckily I managed to locate much lost treasure, and on the following day we made a good haul of the best stuff. Scarlet Runner proved an exception ; it was not snowed under, but it had opened its capsules and scattered a lot of its seed. The Primulas gave no trouble, nor did the lilies. Digging Rhododendrons out of three feet of snow in that bitter wind was an extraordinarily unpleasant job ; but it was an immense relief to be able to do it.

The expected fine weather still delayed, and we were compelled to spend three days at this camp, partly to ensure a good supply of seed, which accumulated slowly, partly because we wanted fine weather for the trip to Pemakö. Wind and snow continually hindered us, but the work went gaily on, and not only did we get seed of every plant we had found in flower, but also of several we had never seen before.

Every day large bodies of Mönbas crossed the pass,

which in another month would be blocked. Though better clad than the Lopas, they usually wore only one garment apiece, consisting of a long, loose *chupa*, or dressing-gown of grey cloth, tied up above the knees by day and let down at night. Most of them went bare-footed, a few wearing long Tibetan boots with hide soles and cloth uppers or even binding strips of cloth round their feet. Those who did this also tied strips of bamboo over the instep lest they skid on the snow slopes.

On October 18th Cawdor went up to the pass, and reported it easy, despite the fast-rising snow ; and on the 21st we moved over into Pemakö, as described in Chapter VIII.

On the 25th we were back at the glacier flat, and I spent the 26th on a last seed hunt. It was a glorious morning after a sharp frost, and I thoroughly enjoyed the six hours I spent in the snow ; also I discovered a cache of Scarlet Runner, and Plum Glaucum.

One of the most lovely sights on the mountain now was Yellow Peril, which outrode the snow in billows of bluish green. The silver Lacteam, too, was not yet engulfed.

During the descent to the lower meadow on October 27th I collected seed of the tree Rhododendrons, all of which were now ripe—the small ‘Grande,’ Coals-of-Fire, the pink ‘Thomsoni’ and the big ‘Lacteam.’ The weather broke again and a snowstorm came whirling over the pass, tearing the trees inside out.

Next day we returned to Pe with the booty, collecting till the last minute. This time we were given quarters in a house, which was absolutely necessary now that we had nearly a hundred newspapers of seed-vessels to spread out on the floor.

Crowds of Mönbas were still coming and going, and a regular market was being held. Besides salt, they

were taking back with them live sheep and goats, and even dogs.

Next day the official invited us to lunch—or rather cooked an elaborate lunch for us. First of all cups of raw spirit and buttered tea were placed on the table, and these were followed up by (a) saucers containing strips of raw turnip, (b) saucers containing chopped meat and sliced chillies, and (c) a large bowl full of macaroni and meat, floating corpse-like in anæmic soup. We ate these, sweating from every pore, and they were removed, and full dishes substituted; we ate those breathing hard, and the third course, which was like the first and second, followed; but when we had finished that we had to surrender. Apparently our host was prepared to supply as many courses as we felt we could manage; but though climbing in wind and snow makes one hungry, unless one is accustomed to full meals the breaking-point is soon reached.

That night was the last of the fun fair so to speak, and the *Depa* gave a dinner and dance—in our house. We rather felt we were paying the piper, as we had just handed over a substantial cash balance for our transport.

The *Depa* sat cross-legged on his cushion, with a fur cap as big as a busby on his head, and fifteen others crowded into a room which would barely hold six comfortably. Illumination was supplied by the fitful blaze of pine-wood chips, which smoked and spluttered on the hob.

There were dances—Tibetan dances, Mönba dances, Kampa dances, even Poba dances. The company, which was mixed, took it in turns to amuse the *Depa*, who joined uproariously in the songs. The thirst provoked by all this melody was attended to by a woman who went from guest to guest with an inexhaustible

stoup of beer. Music for the dancers was provided by the audience, who sang. The Tibetan dancers stamped a good deal, but the timing was bad and it was impossible to distinguish any rhythm in the caterwauling that went on. The idea is to hold on to the last note as long as possible, which gives every one a chance of coming in and getting at least one note right.

After the Tibetan national clog dance, a tall, nice-looking Mönba with shingled hair took the floor. He sang a slower, sadder song as befitted one from the jungles, and waved his arms about. It reminded me of a Burmese *pwe*.

Then came the turn of the long-haired Pobas, who were very drunk. A goitrous old man, his face creased as though some one had pleated it while he was still a baby, and forgotten to iron it out afterwards, danced and stamped and sang, with great energy, to the delight of the audience. He was very active when others were performing, and 'gagged' during the songs; to judge by the girlish giggles and hoots of mannish laughter with which these gags were received, he must have got home with many a bucolic *riposte*.

And so the entertainment dragged on and petered out with the pine chips, while the *Depa* continued to the last to beat time with his hands and join in the chorus. At midnight the meeting broke up, everybody being more or less intoxicated.

The last three days of October were brilliantly fine; the rains were over. From the slope above Pe we had a startling view of the snow-wall from Namcha Barwa, whose conic tip showed above the near ridge along the sloping shoulder, to the river gap, and so up again to the rounded hump of Gyala Peri.

We left Pe on the 31st and marched by a high path to the cultivated terrace on which stands Kyikar. The

river had fallen 20 feet and was fretting shrilly over the skeleton moraines, as it galloped into the gorge. Our friend the headman provided us with the best butter and bannocks we had tasted for a long time, as well as with his own excellent brew of beer.

Next day we reached our first camp below the Nam La, and ascended to the upper camp at 14,000 feet, on November 2nd. What an odd contrast to the Doshong La, only 5 miles to the south! All the streams had dried up, and there was only just enough snow near our camp to provide us with water! On the other hand, the cold was intense, the sheltered thermometer showing 28° of frost on the night of November 5th.

In the course of a week, I collected seed of *Primula Baileyana*, *P. Littledalei*, *P. szechuanica*, and other species; several Rhododendrons, including the yellow-flowered *R. elæagnoides*; and some good Saxifrages. We also mapped the valley, fixing the positions of the Nam La, and of the snow-peak we had discovered called Temu Tse. We had intended to cross the pass, but Cawdor, who after a hard struggle reached the summit on November 5th and succeeded in getting a boiling-point reading, was of opinion that the porters would never do it. So we gave up the idea; and felt justified when the weather broke again on the 7th and it snowed for three days. Had we crossed over into Pemakö we should certainly have been caught on the wrong side of the pass, unable to get back; and that would have upset the trip through the gorge, which was more important.

On November 7th we descended to the lower camp; we could indeed easily have reached Kyikar, but there was still a lot of seed to collect, so we took our time. Back in Kyikar, seed collecting was virtually over. It only remained to pack the specimens before starting

out to explore the gorge. Four days were spent in clearing up this work, and making final preparations for the plunge into the unknown ; and on November 12th we moved a few miles down the river to Lungpe, reaching Gyala on the 13th.

The last snowstorm had blown itself out, and the weather was brilliantly fine in the gorge, with sharp frosts at night ; but it was evident that we must expect storms at frequent intervals.

When we reached Gyala, itching to be off, a difficulty arose. The local Baron, who lived in Heath Robinson House, had indeed promised us every assistance ; he now informed us that he could not supply the transport, but said that he was getting it from a village up the river. Would we wait two days ? We had indented for twenty stout male coolies, and these he had not in stock ; also for rations for all, ropes, and axes. The second part of the indent he was able to fill from the quartermaster's stores, which every Tibetan Baron has at his command. But the stuff was useless without men to carry it. It appeared that there had recently been an epidemic in this district, resulting in the death of six villeins, including two stout warriors formerly employed by us, and known as Henry the Eighth and the Duke of Monmouth, and a woman, Anne Boleyn.

This was awkward ; nor did I like the alleged S.O.S. call for assistance which he sent out, knowing full well that he had no power to levy transport outside his own district and that such messages as he did send out must have an entirely different purport. And so it proved. To-day's bright thought had suddenly struck the rascal. Suppose we were exceeding our brief in trying to pass through the gorge where no track was, and no one ever went ? Would he not get into trouble for failing to stop us ? Besides, here was a way out of the dilemma ; he

had promised us coolies, and behold through no fault of his own he could not conveniently supply them. Why not get an official veto put on the project? Accordingly our friend sent a secret letter to his superior up the river asking whether the journey was in order!

Now it so happened that our friend the Commissioner of Gyamda, continuing his whirlwind campaign against the renegade monasteries of Kongbo, was just now at Temo, and had called the ecclesiastical authorities to a conference there. Even Pemakochung, 30 miles down the gorge, had heard that clarion call and obeyed. Gyala's letter then came to the Gyamda Commissioner. The answer must have surprised him. It conveyed not only immediate orders that we were to be supplied with porters at all costs, but also that the bearer of the letter, a lama from Pemakochung, who some years previously had been on a pilgrimage to the Holy Rock, must guide us through the gorge! Now you might search the whole of Kongbo and not find five men who had ever been through the Tsangpo gorge; so we were exceptionally lucky.

The Baron now had his orders, and henceforth he was helpful. Every household in his poor little district was subpœnaed and by means of a levy on his own domestics, he at last scraped together twenty-three coolies—ten men and thirteen women.

It must be clearly understood, of course, that for this enterprise we could take no transport animals of any description, no ponies, or mules, or even yak. The gorge is filled with cliffs and boulders and dense trackless forest, through which the howling river rushes with a resounding roar. Therefore, everything had to be carried by coolies, most of whom must carry rations. All our heavy baggage—boxes, tents, camp equipment and so on—had to be left behind at Gyala, in charge of Sunny

Jim, and six weeks elapsed before we rejoined the main body.

Tom was to accompany us the whole way, and Dick was in support as far as Pemakochung, whence he would rejoin Sunny Jim at Gyala, and so to Tumbatse, where the remainder of our kit had been left. Tumbatse is only two marches from Tongkyuk, where we arranged to reassemble for the journey home.



WOMEN COOLIES OF GYALA WHO ACCOMPANIED
US THROUGH THE GORGE



MEN COOLIES OF GYALA WHO ACCOMPANIED US
THROUGH THE GORGE

CHAPTER XIII

THE GORGE OF THE TSANGPO

November 16th dawned brightly, after 10° of frost. Final preparations were soon made, and at 10.30 we started on the journey, our party including Tom, Dick, the Walrus, twenty-three porters, a sheep, and two dogs. Just outside the village some one had set light to a heap of juniper branches, and the coolies now stood round, passionately repeating long prayers to the spirits, that they might guard them from the dangers of the gorge ; then each cast into the flames a pinch of *tsamba*, to seal his vow.

Immediately afterwards we began to climb the steep pine-clad flank of the cliff. The torrent which had caused us so much difficulty in July was crossed high above the river, and ascending higher still we finally halted for the night near the summit of the great cliff called Musi La, that is ' sulphur peak ' ; a cold sulphur spring rises here, and has coated the rock with a gummy deposit. That night the weather changed, and the temperature fell only to freezing-point—a bad sign. About noon next day the sky clouded over and it began to snow.

Meanwhile we continued to climb till we were 2,000 or 3,000 feet above the river. As we passed from a more sheltered to a more exposed face, or descended into a deep glen, or climbed up or down, the vegetation changed completely. At one moment we were in pine forest, then in bamboo forest, again in mixed forest,

where maple and birch trees, large as they were, looked dwarf beside the gigantic *Picea* trees. We could not measure these last, but estimated them to be 200 feet high and 8 feet in diameter near the base. The massive trunk rose unbranched for 100 feet.

After climbing a cliff we turned a shoulder and found ourselves in dense *Rhododendron* forest, which was already covered with snow. The species were: pink 'Barbatum,' pink 'Thomsoni,' a 'Grande,' a 'Cinnabarinum' or 'Triflorum,' and the sticky 'Strigillosum.'

Then, descending a thousand feet, the composite *Rhododendron* forest gave place first to 'Grande' forest, some of the trees being 40 feet high and 4 feet in girth near the ground, and still lower to bamboo forest. Here we made our second bivouac on a slope so steep that the men had to build platforms to sleep on.

Next day we descended to the river bank, marching through forest as usual, and camping under a rock at the foot of a cliff. It was a fine place for a shelter, and we slept comfortably, though our roof was quite wasted, as no rain fell.

The river here is a tossing sea of waves, the bed being choked with boulders. A little lower down a glacier enters the river at an altitude of 8,730 feet. Five glacier streams from Sengdam Pu and Gyala Peri flow into a large basin-shaped valley, from which one stream emerges, and flowing on down a steep narrow gulley, reaches the river.

At this point the vegetation changes again, and whole new tribes of *Rhododendron* appear. Foremost amongst these are species of the 'Maddeni' series, including a form of *R. Maddeni* itself. It makes stout bushes on the rocks, in company with two species of the 'Virgatum' series. Epiphytic *Rhododendrons* also appear, chiefly the little box-leaved *R. vaccinioides*, with

dangling apple-cheeked capsules, an inch long and no thicker than a bodkin. Bunches of scarlet berries hung from the long twining stems of a *Solanum*, or deadly nightshade.

We had a long march in prospect next day, so the ration coolies set out at 8 o'clock, while the higher command were breakfasting and packing up the bedding. Eventually we got off at 9 and climbed a cliff which brought us on to a narrow forested shelf. From a bluff we presently obtained a good view of the valley ahead, and the galloping river, all foam and fury. Climbing up and down over wooded spurs we halted for the third night under a high cliff.

Now the rocks right down to the river were covered with *Rhododendrons* which, in fact, formed the bulk of the forest. The species familiar to us in Kongbo had almost entirely disappeared, only the pink 'Thomsoni' remaining; they had been replaced by Indo-Malayan types—species of the temperate rain forest.

One of the most interesting of these was a 'Maddeni' with oval rugose leaves and peculiar venation, the sunk channelled veins of the upper surface standing out prominently on the lower (K.W. 6286). It closely resembles *R. megacalyx*, a species I discovered in the Burmese jungle many years ago. The almost spherical capsule completely enclosed in the leafy calyx is like no other 'Maddeni.' It grows on the sheerest cliffs, and in addition to being uncommon, is often inaccessible. Another fine species was the big-leaved *R. grande* (K.W. 6261), already described. We noticed many young plants and seedlings here, and a few days later, on a moraine in the forest, I found a young tree, only about 8 feet high, with several trusses of fruit. In swampy places there grew a spreading untidy shrub with more or less ascending branches—one of the

'Irroratum' series with blood-red flowers (K.W. 6285). This plant we saw henceforth almost daily, and it was especially abundant in the swamps round Pemakochung, where it took on almost the appearance of mangrove.

The bulk of the forest, so far as Rhododendrons were concerned, was composed of a leathery-leaved tree with blood-red flowers—another 'Irroratum,' and a purple-flowered 'Arboreum.' The former (K.W. 6284) had bloomed at high pressure, and was everywhere crowded with large trusses of good fruit. Not so the latter; and, common though it was, many days passed before I found a fruiting specimen far down the gorge (K.W. 6280, 6311). I have mentioned the colour of the flowers in several instances, but it must be remembered that these were only stray blooms which had opened out of season. Early spring is probably the flowering season. The forest then, tier on tier from the dripping snow to the rocking river, must be one incandescent lava stream of Rhododendron blossom. Altogether I counted no less than twelve good species and true this day. Not only were they even out of flower, the most conspicuous feature of the vegetation, but some species formed forests almost entirely by themselves. This was particularly noticeable with *R. grande*, the big 'Irroratum,' the 'Arboreum' and the swamp 'Irroratum'—which, by the way, was not confined to swamps. Many species were epiphytic on various big trees, and the cliffs supported masses of *R. Maddeni* and *R. virgatum*.

Presently we descended into the river-bed for the first time, but the going was not easy; at the base of the forest was a stone breakwater made of smooth blocks as big as houses, and jammed amongst these like broken matches were huge tree-trunks bristling with splinters. After climbing up and down over these obstacles for some time, our ears filled with the roar of

the river, we camped under a rock in the forest ; we had been marching seven hours, but had only done about 10 miles.

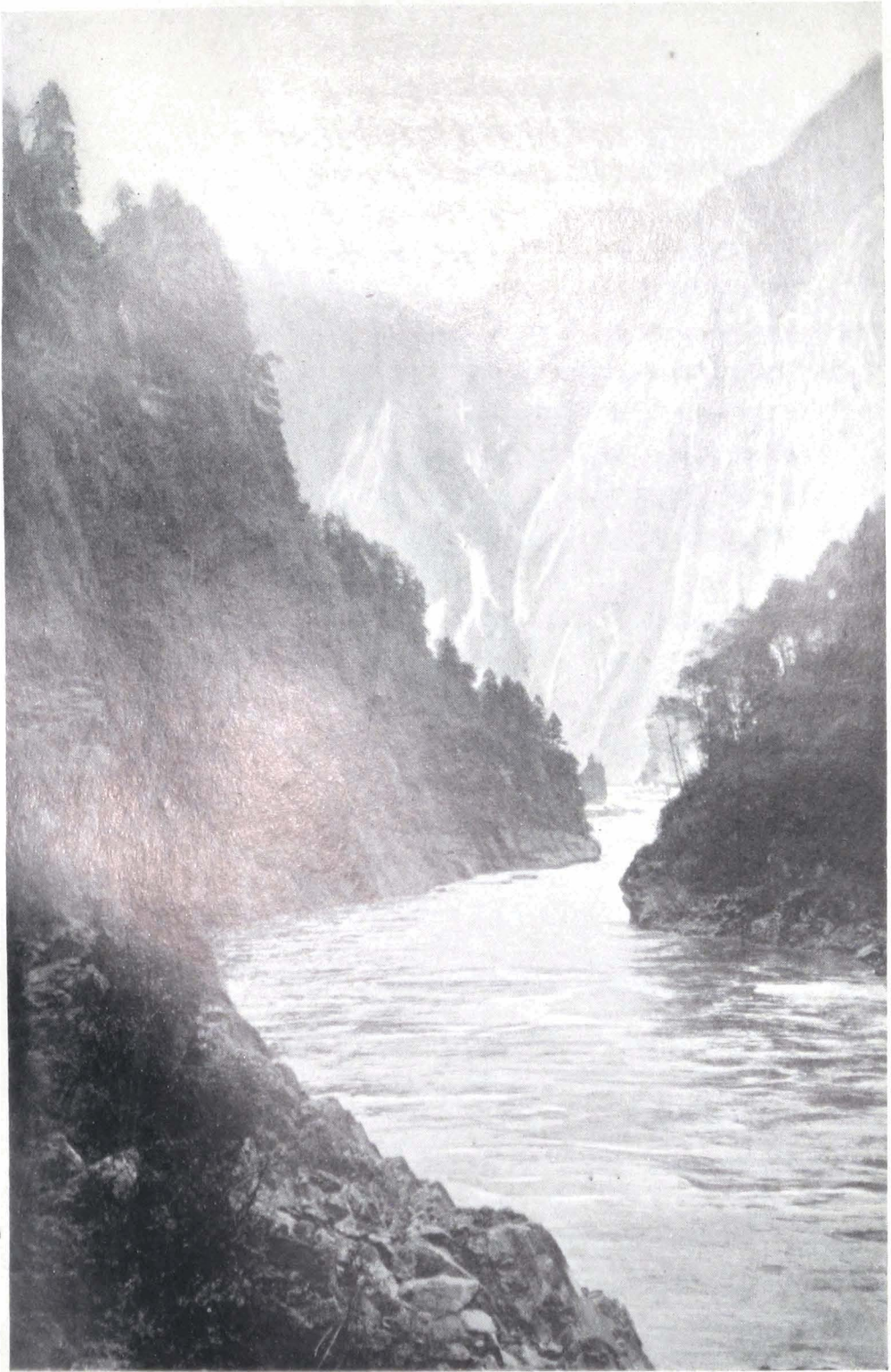
The procedure in camp was as follows: A site was selected for our bedding under a rock or a big tree if possible, and bamboos were cut and piled so as to form a mattress. Fires were then lit, and we all had tea and something to eat. While the porters were collecting firewood, Cawdor and I botanized, or took photographs, or observations for altitude, and about 7 o'clock we had supper, which consisted of soup and curry. Then, sitting round the fire, we wrote up our diaries, talked till we were sleepy, and turned in about 9 p.m. Often we could not sleep, either because we were too cramped, or because the ground was too hard, or because it was raining and we had no cover, or simply because we were too excited or not sufficiently tired. About 6 o'clock we awoke, and breakfast was ready by 7. There was little delay over starting, since we slept for the most part in our clothes, and our blankets were soon rolled up. By half-past eight we were off, and the length of the day's march depended on the time it took to reach a good camping-ground. So long as we were close to the river, we could bivouac almost anywhere ; but up on the cliffs water was scarce, and it usually fell out that we must halt either very early or very late.

On November 20th, after a fine night, followed by a heavy dew in the early morning which drenched the forest, we scrambled down the cliff and got our third boiling-point reading in the river-bed since leaving Gyala. The altitude was 8,506 feet. Our day's march lay partly in the river-bed, partly in the forest. Early in the afternoon the river suddenly swung due south, and through a window in the jungle we looked out and saw the northern glaciers of Namcha Barwa, coldly

menacing, relentlessly pushing on as though to engulf the forest ; but as a matter of fact they are withdrawing their forces. Next minute we came out on to cultivation. Nothing could have come as a greater surprise. The great river was plunging down, down, boring ever more deeply into the bowels of the earth. The snow-peaks enclosed us in a ring of ice. Dense jungle surged over the cliffs, filled the glens, and marched boldly up to battle with the snow. And in the midst of all this strife, in a quiet bay in the mountains, round which the maelstrom of river, forest, and ice fought dumbly for dominion, was one poor little badly cultivated field!

Ascending by a path to a terrace, we saw perched on a knoll, in the midst of a great swamp, the little wooden monastery of Pemakochung ; and here the Walrus invited us to stay in the temple. The famous lama Kinthup visited Pemakochung in 1881, when trying to trace the course of the Tsangpo, but was unable to proceed farther. He reported the Tsangpo to be 2 chains distant from the monastery, and said that about 2 miles off it falls over a cliff called Sinji-Chogyal from a height of about 150 feet, and that there is a big lake at the foot of the falls where rainbows are always seen.

From the explorations of Bailey and Morshead in 1913, it became clear either that Kinthup had got mixed—for the account of his three years' wanderings were dictated from memory, or that a mistake was made in translating or recording his story. 'Sinji-Chogyal' is evidently Shingche-Chögye opposite Gyala, where a stream falls 150 feet over a cliff into the river, and there is only a small fall on the main river at Pemakochung. Bailey saw this when the river was in flood, and described it as about 30 feet high, and Cawdor saw it at low-water, and described it as more of a rapid than a waterfall.



GORGE OF THE TSANGPO, BELOW PEMAKOCHUNG

At any rate, it is not the impressive sight geographers had been led to expect.

Bailey and Morshead, after overcoming tremendous difficulties, had followed the river for another 10 miles, and still there were no falls. But there remained a gap of 50 miles more or less, about which absolutely nothing was known; indeed, for half that distance there was said to be no track of any sort near the river, which was hemmed in by bare rock walls several thousand feet high. Was it possible that hidden away in the depths of this unknown gorge there was a great waterfall?

Such a thing was quite possible, and it was this question that we were resolved to answer. We would, if possible, go right through the gorge, and tear this last secret from its heart.

The Falls of the Brahmaputra have for fifty years been the great romance of geography. Everything, even tradition in Tibet itself, pointed to their existence. The Tsangpo near Lhasa flows at an altitude of 12,000 feet above sea-level: the Dihang issues from the Abor Hills at an altitude of 1,000 feet more or less. 150 miles east of Lhasa the Tsangpo, still a big calm river, disappears into the mountains, and after following a course which could only be guessed, reappears in Assam. It has bored its way clean through the mightiest mountain range in the world, and in doing so has descended the enormous height of 11,000 feet! What more natural than to suppose that somewhere in the depths of that unknown gorge was hidden a great waterfall!

The belief in the falls persisted long after the identity of the Tsangpo with the Dihang had been established beyond reasonable doubt; indeed, it grew up *after*, and largely in consequence of, that discovery. For if the Tsangpo were, as was formerly believed, either the

Irrawaddy or the Salween, its course would be so long that there would be no necessity to postulate a waterfall in order to bring it down to the plains at the right point. Moreover, it was largely owing to Kinthup's exploration, combined with that of another famous *pandit*, Kishen Singh, that the final identity of the Tsangpo with the Dihang was established; and Kinthup, as we have seen, reported a waterfall 150 feet high.

Even after Bailey and Morshead had shown that Kinthup was wrong, the question was not finally settled; for there still remained this 50 miles of gorge unexplored. It is true that there had always been a school of sceptics—hard-headed matter-of-fact geographers who, arguing from analogy, coolly pointed out that since no other river which rose behind the Himalaya boasted a waterfall, it was therefore very unlikely that the Tsangpo would prove an exception. But for that matter there was a school who right up to the time of Bailey and Morshead's journey stoutly maintained that the Dihang was not the Tsangpo. The retort to these unbelievers was, indeed, crushing: if the Dihang, as you maintain, rises in the Abor Hills south of the Himalaya, how do you propose to get rid of the Tsangpo? Unless you are prepared to make it sink into the earth, it must be the Dihang!

The answer to the mathematicians, whose case was a good one though by no means overwhelming, still left the matter open. Waterfalls depend as much on geological structure as on geography. If there should happen to be a band of soft rock crossing the lower part of the gorge, with harder rock above, the formation of a waterfall would be by no means impossible.

And there we were left. We approached the matter with open minds and were prepared for almost anything, except the possibility of failure to solve the problem.

We remained at Pemakochung on November 21st, in order to rest the porters. Cawdor descended to the river to see Kinthup's fall and get a boiling-point, while I went up the mountain on a botanical excursion. After picking my way across a bog, making from one nodal thicket to another in no little alarm lest I should disappear in the morass, I reached a dismal swamp, fenced with a network of *Rhododendron* and other trees. Thence I ascended the steep rocky bed of a torrent, above which, on the grassy slope, grew a dwarf *Iris*, with a long narrow, almost cylindrical capsule—possibly one of the ' *Ensata* ' group. I collected seed of this (K.W. 6289). Mounting the earth ridge I soon began to meet with *Rhododendrons* in great variety, nearly all of which yielded seed. However, I soon found I had chosen an impossible route. The face became almost sheer, and had it been bare of vegetation, it would have been inaccessible. But it was not bare. It was clothed with a tangle of *Rhododendrons*, so hard-stemmed and growing so thickly that it was possible to haul oneself up, practically walking on top of them. But it is hardly necessary to add that this was a most exhausting mode of progression, and by the time I had pulled myself a hundred feet up the cliff, waist-deep in the scrub, through which, however, I frequently put my foot with such violence that I was in danger of either twisting my ankle or being wrenched from my hold, I had to give it up. Meanwhile, I had found several new species which promised to be of interest. Perhaps the oddest-looking was a ' *Barbatum* ' with very large leaves and persistent bud scales which bristled all up the wooden stems in a rather untidy manner; but of this, to my chagrin, not a single capsule could I find. A second species was one of the ' *Brachyanthum* ' type, but growing taller and lankier

than Pink Glaucum, and with quite different foliage (K.W. 6303). *R. Edgworthii* was a third species, the 'Virgatum' (K.W. 6278) made a fourth, and there were several others. On bare ledges, away from this awful tangle, a bushy dwarf species formed tussocks and brooms on the mossy floor by itself. I should have taken it for a *Campylogynum* but for its solitary flowers and short stalks (K.W. 6302). This was on the sheltered side. On the other face grew *R. grande*, and several more tree species.

Returning to the monastery after a hard day's exploration and by no means dissatisfied with the result, I packed my seeds, and we made preparations for continuing the journey. Our forces had now to be reorganized. Dick was to remain here a week to collect *Rhododendron* seed. With him would remain the most querulous of the old ladies, and two more would be detached and sent back to Pemakochung after three days. The four of them were then to return as quickly as possible to Gyala. There Dick would rejoin Sunny Jim, and they had instructions to take all the heavy kit back to Tumbatse, and to proceed thence down the *rong* to Tongkyuk, there to await our arrival.

Meanwhile we, with Tom and the Walrus and twenty porters, fourteen of whom carried only rations, would push on through the gorge, and leaving it by the Po-Tsangpo, reach Tongkyuk from the south.

The Walrus collected a lay follower of his own here to carry his basket; he proved one of the stalwarts and a droll fellow.

Meanwhile, a great change had come over the Walrus himself. For the first two or three days he had walked solemnly along, his hands clasped behind him, his eyes cast on the ground, as though he were going to the stake in holy meditation. But now he became quite sprightly,

cracked jokes, told stories, cackled with laughter and, above all, became a very efficient butler and aide to Tom. We found him so invaluable, indeed, that when we reached Payi, instead of sending him back through the gorge to Pemakochung, we took him with us to Tongkyuk, and from there sent him on to Gyala, and so to his little wooden hut by the best road. We now took stock of our party, which comprised, besides ourselves, Tom, Shock-headed Peter, the Lay Reader, the Golliwog, Curly, Pemakochung, the Walrus, seven other male porters, and eight women, headed by the Bakeress, and Lydia and Mary Bennett.

Before we started on November 22nd the usual ceremony to ensure good luck was performed. A smoke screen rose from the altar, the coolies gathered round and sang a mournful song, and at the same time cast some grain into the furnace. Then every one marched once round the temple, gave a final vigorous jerk to the rickety prayer drum, which squeaked dismally in its sockets, and turned towards the river. We were off.

For several miles we marched through swamps and dense forest where the undergrowth grew 6 feet high: crossed the Talung glacier torrent by an awkward tree-trunk, and the Sanglung glacier torrent by a dangerous-looking log, and after little more than four hours' march, camped under a boulder in the river-bed, at the foot of an enormous spur.

The course of the river is very tortuous here. Below Kinthup's fall it makes a U-bend to the south round a sugar-loaf peak, which caps the end of a spur from the north; it then skids round the Sanglung cliff and plunges away towards the north-east, interrupted by occasional violent jerks to north and south.

The cove in which we bivouacked was cluttered with stones and driftwood, and a breakwater of vertically

tilted gneiss runs out into the wild river, which crashes down a 10-foot drop and swings to the north. Spinning stones have drilled holes in the hard rock, some of these mills being very deep. There are also some cold sulphur springs under a ledge, but these are submerged at high-water.

In the river-bed we took a boiling-point observation, which gave an altitude of 8,090 feet.

We found it difficult to sleep here; the thunder of the river was almost deafening, and the whole earth seemed to vibrate with the loud impact of loaded water.

After a minimum temperature of 45° F. in the night, we got away early on the 23rd. There was fresh snow on the trees not very high up, but the day kept fairly fine, with glimpses of sunshine; the clouds, which clung obstinately to the snow-peaks, however, warned us that a storm was brewing.

Almost immediately we were in difficulties, with an awkward cliff to climb, followed by a nasty traverse round the face, along a narrow ledge which overhung the reeling river. The pioneer party went first, and we hauled the women up, the men posting themselves at intervals along the ledge and handing them along. After that, we made our way through the forest for an hour without further adventure, until the way was blocked by an overhanging cliff. Here the main body sat down, thinking that the end had come. A more formidable obstacle at first sight it would be difficult to imagine. It was over the cliff, or back; there was no way round, with the river battering at its foot. Fortunately, there was a chimney or narrow cleft about 30 feet high between the main wall and a detached stack. If we could climb that, the thing was done. At this crisis Curly, the Lay Reader and Shock-headed Peter performed one of the most remarkable feats of

rock-climbing I have ever seen ; they went straight up the almost vertical outer buttress like cats !

Next they felled two small trees, cut steps in them, and lowered them into position in the chimney—which was too wide and too smooth to climb otherwise, and made fast ; two ladders had to be used because there was a block half-way up the chimney, the upper ladder standing precariously on a sloping ledge.

The porters now went up hand over hand. Some of the stoutest even went up with their loads, and Cawdor carried his rucksac up without turning a hair, and descending again, helped the others. But I liked not the look of it, and shed my rucksac at the top of the first ladder, breathing a sigh of relief when I reached the ledge, and safety, above. Tom then tactlessly suggested that as it was getting late, and the pioneer party who had explored for another half-mile had not come on a camping-ground, we should descend the chimney again, camp at the foot and start fresh on the morrow. I flatly refused. I had got safely up the beastly thing, and nothing on earth would reconcile me to chimney-climbing as a habit. Once at the top, there I intended to stay ; and to clinch matters I scouted ahead as fast as I could go. Eventually we bivouacked in the forest just above the river, having made some 4 miles' progress in seven hours.

As a result of the hold-up at the chimney, I was able to botanize for an hour, and thereby added seed of two interesting plants to the collection. One was a baby 'Maddeni' *Rhododendron* with an enormous capsule (K.W. 6310). It flowers when about three years old and no more than 9 inches high, though it eventually grows bigger than this. Like many of its class, it is generally found growing high up on trees, but sometimes it will content itself with a boulder in the river-bed.

Nowhere common, it is distributed through the lower part of the gorge in the Rhododendron-Conifer forest, that is to say, at an average altitude of about 8,000 feet. It also appears to flourish in Eastern Bhutan, where I found a plant (K.W. 6415) which in fruit at any rate is indistinguishable from it. *R. Lindleyi* of the Sikkim-Bhutan Himalaya is its nearest ally ; indeed, our species may be that, but as we did not see it in flower, it is impossible to say for certain.

The second plant of which I secured seed was a big climbing rose, which raised itself 40 feet into the air before smothering a small tree in its prickly toils (K.W. 6309). It bears large erect bunches of spherical bright apple-yellow hips. The seeds have germinated with remarkable haste, instead of lying in the soil for a year as rose seeds usually do ; so it is probably a quick grower.

This day we saw for the first time the beautiful silver-green weeping pine (K.W. 6315).

On the following morning we got another boiling-point in the river-bed, altitude 7,655 feet, and then proceeded on our way, cutting a path through the forest. We could see from an occasional blazed tree-trunk, its wound long since healed over, or from a stump which had sent up suckers, that men had once passed this way. A party of Mönbas, it is alleged, arrived at Gyala a few years ago, but were sent back by the *Depa*, and told to go round by the Doshong La. Such a policy is intelligible enough. In the first place, the country as far west as Temo has long been subject to raids by the tribesmen below, and the Tibetan authorities would be only too anxious to close every avenue of approach. In the second place, it would be difficult, if not impossible, to collect taxes from people using the gorge as a means of entry into Kongbo ; whereas it is a

simple matter if communication is restricted to the Doshong La.

Difficult as it was to cut our way through the forest, however, we realized that without the forest we would not be able to get along at all. On either side of the river the cliffs are either sheer, or very steeply sloping, and then worn smooth. There is rarely a cove to which one can descend, except where a stream breaks through ; and the litter of huge boulders in the river-bed makes progress there wellnigh impossible.

At one time we found ourselves on a narrow rock-ledge just above the river ; bunches and festoons of *Rhododendron virgatum*, *R. vaccinioides*, and other species, hung above our heads, and billowing masses of *R. Maddeni* lined the edge of the cliff below. We were smothered in Rhododendrons. As for the trees, there were oaks, and holly, *Tsuga*, juniper and weeping pine, tree-of-heaven, and a great many others.

After a short march we came to a cliff and had to descend to the river-bed. It looked awkward. To make matters worse, several of the women sat down and began to cry. The pioneer party, or public works department as we called them, made light of the difficulty, of course, and soon found a way down ; Cawdor, Tom and I, having taken off our boots, followed, and the frightened women were pushed and pulled along by willing helpers who carried their loads down for them.

We found ourselves in a small cove, hemmed in by river and cliffs. About a quarter of a mile ahead a big stream—the Churung Chu—enters the Tsangpo, and the river slews round again, flowing north. Thus we had no sooner descended to this cove than we had to climb out of it again ; but the pioneer party, having sent back word that they would have to make more ladders to

scale the next cliff, we decided to halt in the cove for the night. Log platforms were made for our bedding amongst the boulders, but it was both hard and cold. The altitude was 7,600 feet.

Next day, November 25th, we sent two of the women porters back to Pemakochung, a journey which, unburdened as they were, they would easily accomplish in two days, possibly in one.

Cutting our way steadily through the forest, we descended into the deep bed of the Churung, crossed it without difficulty, and found ourselves on a distinct path. There was a drinking pool here, with fresh tracks of 'takin,' that strange heraldic bovine of the bamboo forests, from Bhutan to China. It was takin, too, which, in their annual migrations up and down the gorge, had made the track on which we now found ourselves.

Ascending about 1,000 feet above the river, we presently came to a cliff, which we descended with the aid of the rope. It was probably at this very cliff that Bailey, having with him only one coolie, was held up and forced to return in 1913; but we could not identify the place with any certainty, for ten years is sufficient to change the scenery a good deal. About the middle of the afternoon we halted under a cliff, having come about 3 miles.

During the next four days we made very slow progress, averaging no more than 3 miles a day. The difficulties were immense. Each morning the pioneer party started off early, cutting a path for a mile ahead, the coolies following. When the main body came up to the head of the path four of them dumped their loads and returned for those of the pioneers, which they then carried to the end of the made track, while others carried their own. In this way the loads were relayed to the path head.

The river continued to advance by jerks in a general north-east direction, with fierce rapids which ate hungrily into the core of the mountains. Already we seemed to be far below the level of the ground, going down, down, into the interior of the earth; and as though to emphasize the fact, the temperature grew steadily warmer. And the gorge was growing ever narrower, the gradient steeper, till the power behind the maddened river was terrific. Its blows fell on rock and cliff with frightful force; and at every turn a huge cavernous mouth seemed to open, and gulp it down faster and faster.

On the 26th we reached another glacier torrent, the Shegar Chu, derived from the mighty Sanglung peak, now due south of us, and so close that its icy breath sometimes chilled us to the bone. We camped under bushes in the stream-bed, and could plainly see the icewall at the foot of the glacier, a couple of miles up the valley.

On the following day we discovered that part of the plane table tripod had been lost, and while men went back to look for it, I attempted to reach the foot of the glacier by following up the Shegar Chu; but after an exasperating scramble over the abandoned moraines, I found that the glacier was inaccessible by this route. The moraine extends some 3 miles down the glen below the glacier foot; the burn is now cutting terraces in it, the uppermost being already covered with forest. Here I found a small bush of *Rhododendron grande* bearing ripe capsules—the first I had come across.

Arrived back at our camp after two hours' struggling in the earthen glen, I found the party had only advanced a quarter of a mile, owing to the difficulty of crossing the burn. Also the coolies who had gone back to look for the lost plane table gadget had returned empty-handed; so Tom started off to seek it by the wayside.

After further delay we effected a crossing of the burn, and then climbed a steep cliff in thick undergrowth, which drenched us, for it had been drizzling steadily now for some hours. Finally, we reached a flat-topped cliff covered with weeping pines and juniper trees.

Parting the bushes on the edge of the cliff we peered over and saw the river 1,000 feet below ; we could have dropped a stone straight into it !

There was a whole grove of weeping pines here. It is a grand tree 150 feet high, with long slender needles in sevens, and big pendent cones ; the shimmering bluish-green foliage is beautiful. There was also a giant oak tree, with flaking bark which recalled the Plane. One I measured was 18 feet in girth 6 feet from the ground. Evidently we were approaching another stratum of vegetation, for there now appeared for the first time a large deciduous *Magnolia* with leaves 20 inches long by 10 inches wide, and cones 5 inches long. It must be a magnificent sight in leaf and flower—it stands 30 to 40 feet high, and is not uncommon in the upper rain forest, around 7,000 to 8,000 feet. Then there were *Castanopsis*, and masses of the climbing sausage-fruited *Akebia*, and more ‘Maddeni’ *Rhododendrons* with thick leathery leaves, squat capsules, and pink flowers, besides vines and creepers of various kinds ; *Rubus lineatus*, a species of *Agapetes* (in flower), *Deutzia*, and a charming dwarf *Berberis* with large pendent berries, bright scarlet in colour.

In the course of a march such as ours, one can get quite a good general idea of the flora, but only a very poor idea of its infinite variety ; for the flora of the Tsangpo gorge covers the whole gamut, from the tropics to the Arctic.

CHAPTER XIV

IN THE HEART OF THE HIMALAYA

November 28th was fine again and we made fair progress, though the descent from the 1,000-foot cliff gave some anxiety. There was a forest of alders below that, and then a great sandbank, on which we noticed the tracks of several wild animals. A tropical note was added by a troop of noisy quarrelling monkeys, which made the forest ring with their cries, and Cawdor saw a herd of takin on the other side of the river. We were still following their tracks on the right bank.

The men collected bushels of toadstools for supper ; and glued to the cliffs we saw a huge fungus, like a flattened bath sponge or a double-decked cake, the lower half white, the upper half honey-coloured. We were told it was good to eat, but though we saw several more, they were all inaccessible. Camping again in the river-bed, we got another boiling-point (7,153 feet). Two streams from Sanglung enter the river at this point, close together.

November 29th was our last day in the upper gorge, for by evening we had come up against a cliff beyond which it was impossible to advance. We were by no means certain when we started that we could reach the foot of this cliff where the river doubled back on itself, flowing towards the west, for an immense landslide had spoilt the scenery, and we had some difficulty in crossing an arm of the river, and even in getting along at all. Eventually we surmounted all obstacles and hacking

our way through dense scrub which presented an impregnable front on the steep slope, camped in the river-bed again, having covered 2 miles in six hours. The altitude was 7,098 feet.

The scrub just mentioned through which we had to force our way was an extraordinary assortment, consisting of *Rhododendron virgatum* and other species, Gaultheria, Berberis, Buddleia, Cotoneaster, Elæagnus, Deutzia, Hydrangea, Birch, Alder, Pinus and Tsuga. It clothed a smooth rock slope facing the sun, the shrubs compact and wiry, the trees stunted and twiggy ; we had not seen such a close formation before.

Arrived in camp, one of the porters collapsed. Our men, as I have said before, were excellent, and they did yeomen service. But, after all, they were used to it, and though we could not but admire their strength and stamina, we had to confess that they had no do-or-die tradition to fall back on, no reserve moral force,—in short, no guts. If anything went wrong they caved in. The deeds which seemed to us—rightly, I think—fine, were everyday work to them. It was in adapting themselves to the unusual, the unexpected, that they failed completely, like children. So long as they were in their element, they might lead, and we were content to follow ; but as soon as unusual things began to happen, it was for us to lead, and for them to follow. It was here that Cawdor, who was daunted by nothing, rendered invaluable service.

As I have said, one of the porters, feeling sick, collapsed and cried like a child. His friends rallied round, and revived him by black magic as it appeared to us. The Lay Reader took from a leather wallet he wore suspended round his neck some charms carefully wrapped in little pieces of paper ; one contained seeds, another bits of rag, a third written prayers. Some one produced a pan

of hot charcoal, the charms were thrown in, and a thin curl of blue smoke tickled the patient's nostrils. He coughed and spluttered feebly, and gave himself up to a painless death. Then appeared the Walrus. He sat down by the sufferer, muttered long prayers, and with his rosary beat the victim over the head. Clearly they were determined to get something into his head by hook or, if necessary, by crook. The upshot of it all was that by the morrow he was sufficiently recovered to come on with us. He had, indeed, implored us to rest there a day; but all we could promise was that if he was too ill to move next day, we would detach one of the women to stay with him, leave them sufficient food, and send back help as soon as possible. Obviously, we could not risk starvation for the whole party. The Walrus reckoned that we were still three days' march from the nearest village, and already some of the more improvident of the porters were cutting down their rations. We ourselves were within the margin of safety, but we could not have fed the company for a day.

However, nostrums, prayers and blows effected what we could not have effected ourselves, since we were unable to diagnose the malady; the man was relieved of his load; and rather than remain behind in that stormy crack—as he frankly admitted—he tottered after us. Two days later he was quite well again.

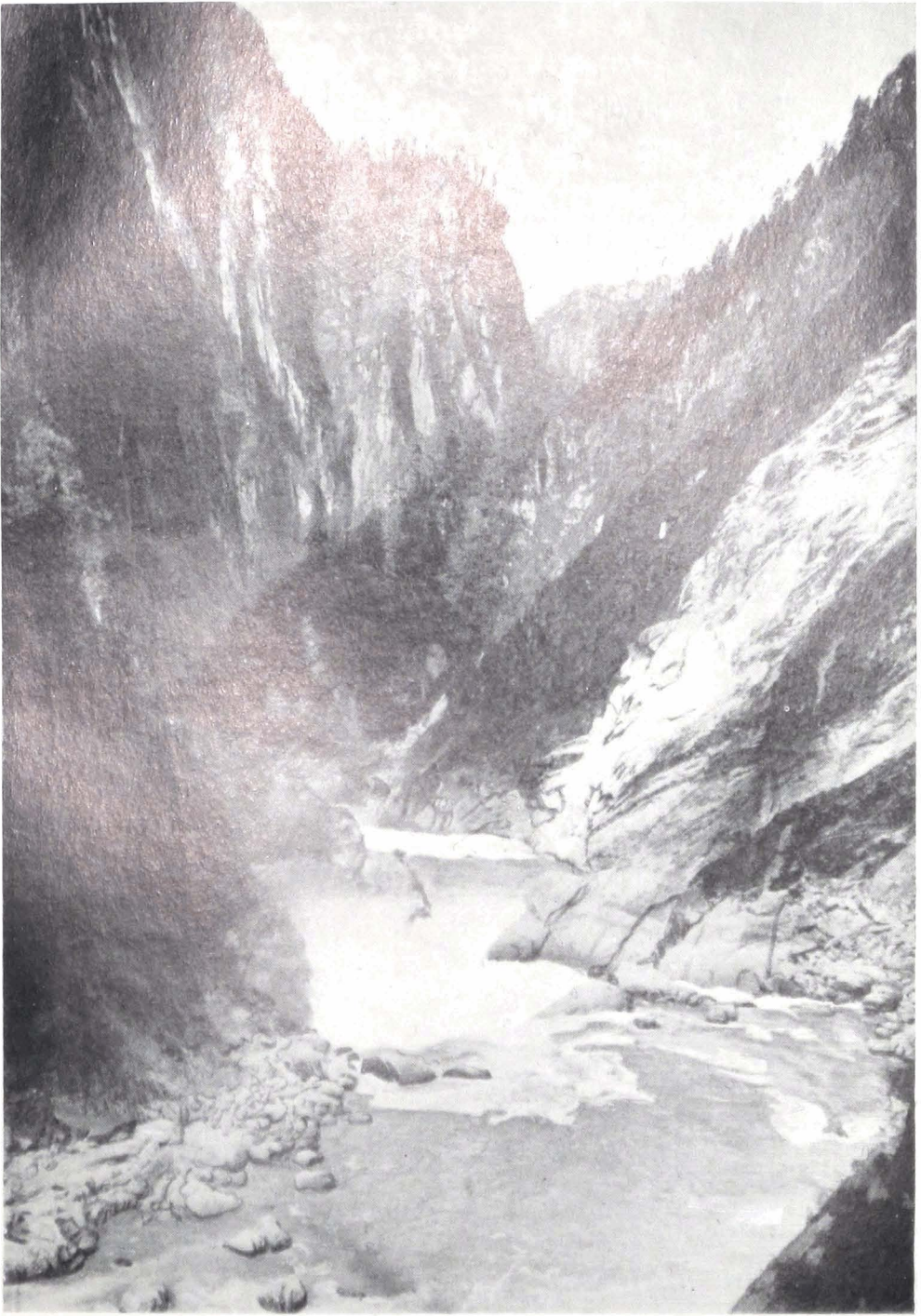
We camped amongst the boulders, as I have said, close beside the thundering river. A quarter of a mile ahead a blank cliff, striped by two silver threads of water, towered a thousand feet into the air. The river came up against this cliff with terrific force, turned sharp to the left, and was lost to view. We scrambled over the boulders, crossed a belt of trees and a torrent, and made for the foot of the cliff in order to see what became of the river; but even before we got there our

ears were filled with a loud roaring noise. As we turned the corner, and before we could see straight down the river again, we caught sight of a great cloud of spray which hung over the rocks within half a mile of where we stood. 'The falls at last,' I thought! But it wasn't—not *the* falls. A fall, certainly, perhaps 40 feet high, and a fine sight with rainbows coming and going in the spray cloud. But a 30 or 40 foot fall, even on the Tsangpo, cannot be called *the* falls, meaning the falls of romance, those 'Falls of the Brahmaputra' which have been the goal of so many explorers.

Nevertheless, we stood spellbound, as well we might. The river here swung round to the west, boring its way between two mighty spurs which jutted out, one from Gyala Peri, the other from Sanglung. Cliffs towered up on both sides, so close together that it seemed one could almost leap from crag to crag; and the cliffs were *smooth* as well as sheer. Only high up against the skyline did a few trees cling like fur to the worn rock surface. Obviously we could get no further down the gorge; to scale the cliff seemed equally impossible.

But above our camp the cliffs were to some extent covered with shrub growth; and up these lay our route, as I was to learn on the morrow.

It rained in the night, and having no cover we got soaked and slept badly. Nor did things look any better on the following day, November 30th. However, we had to go on, and we faced the cliff early, cutting a path through the belt of forest to the rock foot. Then the fun began. Of that climb I have only an indistinct recollection, beyond the memory that it was a nightmare. The cliff was all but vertical. Here and there it was rent by cracks and joints, out of which grew bushes; and these we followed sometimes on a slant, sometimes hauling ourselves vertically up the face by means of



THE RAINBOW FALL, TSANGPO GORGE, FROM 200 FEET ABOVE

Photograph by Lord Cawdor

the bushes. A false step meant disaster. At one place we had to stride across the cascade which splashed and slithered coldly down the slab face. It was an awful moment, but every one got safely across. At last we reached the second cascade, right on the corner where the river turned; here we had to use the rope to climb a short cliff, and above that we found forest and security. Here I noticed an ash tree and a curious bush which I had previously taken to be a Rhododendron, though it was not. But perhaps the most astonishing fact of this climb is that takin had been up the cliff before us! We followed their track, basing our route on theirs. Indeed, at the summit, in a glen from which the second cascade originated, we found a dead takin. It had been caught in a rope noose, set by some Mönba hunters, and in trying to free itself, had fallen over the cliff and broken its neck. As a full-grown takin may easily weigh between 600 and 700 lb., and stand 2 feet high at the shoulder, it is no small feat for it to climb such a cliff as the one we had just climbed. But the fact is the takin must needs be a powerful beast to force its way through the dense bamboo growth on whose foliage it feeds.

The traps set by the Mönbas are of the simplest description, and the migratory habits of the takin are its undoing. All the hunter does is to build a stout fence across a well-worn track, leaving only one gap; if possible a track is chosen from which the animal cannot make a detour, the fence at one side resting on the cliff. A noose of bamboo rope is suspended in the gap in such a position that the animal must insert his head, whereupon it is drawn tight when he tries to force his way through; eventually he strangles himself.

Having reached the deep stony glen above, on the Sanglung spur, 1,852 feet above the river, we cast about

for a place in which to spend the night. The flanks were very steep, and though there was forest above, it looked remote, and almost as inhospitable as the glen. Our party split up, and six of us selected an eligible site on the face, while others, more fortunate, went up into the forest and slept snugly in a hunter's lair which they discovered!

At dusk it began to rain, a bitter wind sweeping down the glen off the snowfields. The fire smoked evilly. We huddled together, drenched and shivering; but as there was not room for all of us round the fire, which gave out a minimum of warmth with a maximum of smoke, I retired after supper, and crept into my fleabag, where I slept soundly in a puddle. Cawdor sat up all night by the fire, dozing occasionally; while Tom, the Walrus and the Bakeress kept him company. Funniest of all was Pemakochung, the Walrus's servant, who kept one bare foot warm all night by nursing it, and the other by thrusting it into the pit of the Bakeress's stomach. He was a cheerful youth, and was thoroughly enjoying himself, affording us much comic relief.

We woke very early on December 1st, but after the discomforts of the night it was late before we got off; the porters were on the verge of mutiny and required a little tactful handling.

We followed a hunter's trail now, ascending through forests of giant Tsuga, Rhododendron and other trees. Through a gap we caught sight of the snows, still wreathed in cloud, but occasionally appearing; behind us, due south, the saddle between Sanglung and Namcha Barwa; on our left front, the hooded peak of Gyala Peri, continuous with which was a whole range of snow-peaks stretching away eastwards towards the Sü La. Somewhere thereabouts the Po-Tsangpo joined the Kongbo Tsangpo. We now found ourselves on a very

steep path on the edge of the forest with a steep drop into the bare glen on our right. The trees increased in size, and there were many small epiphytic Rhododendrons on the moss-clad trunks. In the upper forest snow lay on the ground.

At last we reached the crest of the long Sanglung spur, and could look over into the gorge of the river on either hand. Far away a patch of emerald green looking no bigger than a pocket-handkerchief spread out to dry shone on a chequered slope ; it was a cultivated field.

We marched north-westwards along the crest of the spur for a mile, through forests of giant Abies and tree Rhododendrons, whose leaves hung stiffly down in the snow. We were now 3,714 feet above the river, or 10,812 feet above sea-level ; crossing the ridge, called the Shengchen La, we began to descend steeply. Soon we reached a pool in the forest and halted for the night. Great fires were lit, shelters were built, our blankets dried, and that night we lay down on soft couches of silver fir branches and slept soundly.

Towards morning, after a fine night, it grew so cold that we had to get up ; but the temperature only fell to 30° F. under the trees. However, the two 'Grande' Rhododendrons, the 'Falconeri' and the sticky-haired 'Barbatum' (K.W. 6255, 6261, 5877, 6256), all have to withstand snow and temperatures below freezing-point ; nor had they yet encountered the most severe weather of the season.

I collected seed of the silver fir here from the many big cones which were lying about (K.W. 6332).

The descent down the east flank of the Sanglung spur, at first northwards along the face, and finally north-eastwards along the crest of a minor spur, took us nearly five hours ; but there was a track all the way. Passing through Conifer forest into Oak forest, we soon got down

into jungle, and a wealth of new trees; *Rhododendron Maddeni* was in fruit and a new species with tiny capsules in threes, which I did not recognize (K.W. 6335). There were big bamboos, giant Araliaceæ with huge palm-like leaves, queer orchids, such as *Cirrhopetalum emarginatum*, in flower on the moss-clad tree-trunks, and many other things. And then suddenly the abrupt descent ceased and we came gently down into cultivated fields, and saw clusters of wooden huts in the distance. We had descended about 5,000 feet from the top of the spur, though we were still a good thousand feet above the river.

Now we were in a new world. How surprising it was to see fields and houses. Nay, the surprising thing was that we were in the world at all! While we had been following the river as it gnawed its way through the Himalaya, wedged between those magnificent snow mountains, nothing seemed more unlikely than that we should ever reach civilization again. Every day the scene grew more savage; the mountains higher and steeper; the river more fast and furious. Had we finally emerged on to a raw lunar landscape, it would scarcely have surprised us, but for one thing. As the river, rushing like a lost soul between the hot hell in the heart of the Himalaya and the cold hell on the wind-swept peaks which guard the gorge, grew more dynamic, as the scenery grew harsher, and the thunder of the water more minatory, the touch of Nature came marvellously to the rescue. Everywhere, by cliff and rock and scree, by torn scar and ragged rent, wherever vegetation could get and keep a grip, trees grew; and so, from the grinding boulders in the river-bed to the grating glaciers above, the gorge was filled with forest to the very brim. Ten thousand feet of forest coloured those cold grey rocks of tortured gneiss; and when the

summer rain weeps softly over the scene of riot a million trees will flame into flower and strew their beauty over the ruin.

And so on a sunny afternoon we marched into Payi, or Payul, amidst gardens of Cosmos and tobacco. We felt triumphant, though there was more to do yet—indeed, the hardest part of the job still remained to be done ; but first we wanted to sleep, and sleep and sleep.

The river at Payi looks no bigger than it did where we last saw it, in spite of the extra volume of water derived from the Po-Tsangpo ; but we were at least 1,000 feet above it.

Immediately below Payi is a rope bridge, connecting with the path on the opposite side of the river, which leads to the Sü La, or Zu La as it is pronounced here. There is no path down the right bank, and the cultivated slopes end in a high cliff, which extends downstream for some distance ; two fine cascades are visible below. The river flows east for 2 or 3 miles, then bends northwards round a spur before resuming its course.

Across the river is a range of snow-peaks, and above Payi is the great bulk of Sanglung, 23,018 feet, with a terrific snow cliff facing eastwards ; east of that again are several smaller snow-peaks, and then the range, which just west of Sanglung had attained the dazzling height of 25,445 feet in Namcha Barwa, sinks down and melts into the low rounded jungle-covered hills of the Abor country.

A much greater variety of crops is grown here than in Kongbo. Chief of these are : in spring, barley ; in summer, maize ; and in autumn, buckwheat and millet. We noticed also castor-oil, hemp, chilis, limes—rather hard and tart, but refreshing, small apples—also rather hard, but sweet, and bananas. The change of diet with dessert did us good.

Quarters were provided for us in the local temple. We found that every village, however small, has a temple ; for the people make a great outward show of Buddhism. But when they pray, they pray in secret, closing the temple door, and sacrificing fowls, whose blood and feathers are smeared on an altar in the jungle.

The high priest, a pleasant-looking man, promised us transport for the following day, our objective being Gompo Ne, at the confluence of the Po-Tsangpo with the Kongbo Tsangpo ; and everything was settled in the most satisfactory manner possible. We had arrived quite unexpectedly. Nobody knew who we were, why we had come, or whither we were going ; and before the slow-witted people could recover from their astonishment, we were gone again. That was the plan ; and it worked.

Meanwhile Tom, who was in great spirits at the success of the journey, decided to give the coolies a Sunday School treat, and preparations were soon made. A fire was lit in the courtyard, an iron vat of water placed on it, and a great tub of germinating grain—barley and bird-seed—purchased. While we were finishing our supper by candle-light in the shadow-haunted temple we heard the Bacchanalian revels, and went out into the soft moonlight which silvered the valley. Everybody was squatting cross-legged round the fire, and girls were busy pouring out the warm hissing liquor from bamboo bottles. Snatches of song and laughter floated up to the bright stars, and the muffled roar of the river sounded like distant city traffic.

The liquor was produced by the simple process of pouring warm water on to the bird-seed at the top of the tub, and drawing it off at the bottom by removing a bung. The first edition was fairly strong, since it had been standing ; but as more and more was called for it

rapidly lost strength, until finally we were drinking nothing more intoxicating than water. The proof of the spirit is in the drinking, but I doubt if the alcoholic content of this bird-seed brew ever exceeded 3 per cent.

The weak point about all these country brews—apart from their lack of specific gravity—is their inconstancy. No two brews are ever alike. Occasionally you taste a vintage which is just frolicking foam. One sip, and the world is transformed ; it would make the first Sunday in Lent at the parish church look as jolly as a revue. You feel as though you could address a Temperance League meeting at the Trocadero on Boat Race night, or shout down an undertaker's mute at an Irish race meeting. But after that fleeting glimpse of the golden age, the next brew washes it off the slate : it is just soap-suds.

It may be remarked that all the peoples and hill-tribes of South-east Asia, civilized or uncivilized, distil liquor. The staple grain of the country is used in their manufacture—barley in Tibet, rice in China, maize or millet in the hill jungle. There are usually two kinds—the crude liquor, weak, variable, thick and musty ; and a more refined spirit, also of uncertain but greater strength, and without the foreign bodies which are so freely suspended in the former. This spirit, which has the appearance of gin, is kept in small stone bottles and produced only on ceremonial occasions or for honoured guests.

In the hill jungle everybody drinks—men, women and children. Certain functions—a wake, or a wedding, or a holiday—are great occasions for drinking, but except at these bibulous festivals you very rarely see a man drunk, and then only because his alcohol is more methylated than absolute. Subjected to a process of fractional distillation, how many alcohols, aldehydes, ketones and other complex carbon compounds would

this liquor give birth to! That is why these country cocktails are so dynamic.

We had made arrangements for the pick of the porters to come on with us, while the remainder returned to Gyala. Accordingly, the Walrus, Shock-headed Peter, the Lay Reader and the Bakeress stayed. We gave the returning party a handsome present, in addition to their pay (which apparently *all* went to the *Depa*), and took the others on at an increase of wages, which was to be their very own. Richly had they deserved it.

Owing to the festivities of the previous evening everybody was very sluggish next day, and it was nearly noon before we got off. Quite early, however, we sent off an 'arrow letter,' which the village scribe wrote at Tom's dictation, to the up-river villages, warning them of our approach and requesting such transport and supplies as we might require.

This letter, written on very coarse unsized paper with a bamboo point dipped in indian ink, was wrapped round 2 feet of bamboo with two white feathers stuck in the end, indicating express, and entrusted to the village long-distance runner; it went off hours before we did, and we met the man coming leisurely back soon after we started.

A very jungly-looking lot of coolies were told off to carry our loads, which were crammed into bamboo baskets, supported by a head-band. The men, though sturdy, were dwarf in stature and had almost simian faces; nor was their intelligence much ahead of their looks. Arrived at our destination, which, owing to the late start, was the summit of the next spur, they put down their loads and proceeded to do nothing. Even when Tom galvanized them to feeble action, they were almost useless, and it fell to the permanent staff to cut branches for our beds and collect firewood. It then

turned out that there was no water, and two men were sent back to the village to fetch some, under pain of death. They came back a couple of hours later bearing a basket full of bamboo tubes containing sufficient for drinking purposes ; but we had to postpone washing.

Our coolies called themselves Mönbas, but they were really nothing of the sort, though they wore one Tibetan garment apiece, a sort of dressing-gown or *chupa*. They were barefooted, and had shingled black hair, forming a mop which hung straight down all round. It was fairly evident that they were either Pobas, or more probably Lopas. Of course, sophisticated persons never admit to being Lopas, who are looked down upon by the urban population as savages ; they call themselves Mönbas.

We were now in an entirely different atmosphere, and the stratum of vegetation which we had reached showed that we were at a much lower elevation. The south-facing slopes were not thickly forested, but covered instead with bracken, long grass and scrub, with scattered pine, alder and oak trees. A slender twining *Crawfurdia* hung out dozens of purple bell-flowers ; a *Strobilanthes* was in flower ; and so too was the beautiful pink *Luculia gratissima*. If only one could grow that shrub in England, what a revelation it would be ! On the rocks—which were composed chiefly of mica-schist and fine-grained gneiss, and on alder trees especially, were masses of orchids, though few of these were in flower.

Next day (December 4th) we marched through thick forest, climbing gradually, till we reached the summit of a long ridge which runs out from the great cliff facing the Po-Tsangpo confluence ; thence we descended steeply to a solitary house, and presently reached a village of three houses, with the inevitable temple, not

much bigger than a hen-coop. A five-day mass was being held to cast out the devil from a sick man, and the din was fearful. Drums, cymbals, whistles and cat-calls vied with each other; and though our arrival caused a temporary stoppage while the band took a look at us, they soon fell to it again more violently than before.

However, we were warmly welcomed by the High Priest, and the all-solvent beer was produced; meanwhile we were given a house for the night (like most of the houses, it consisted of one room), and were glad of a fire in the centre, not merely to cook by, but on account of the cold; for, though it was very hot in the middle of the day, there was hoar frost outside in the morning.

From this village, called Sengetong, we had a fine view of Gyala Peri, the great snow-peak across the Tsangpo, and close to the Po-Tsangpo confluence; it is a much more impressive sight from the east than from the west, by reason of its curious overhanging summit, like a monk's cowl.

We descended to the Tsangpo, crossing by a rope bridge some 4 miles below the confluence, which was hidden round the corner. The river rushes furiously between sugary-white cliffs of mica-schist and is only 50 yards wide. There are three ropes of twisted bamboo, and the patient is hauled across in the usual way, within 6 feet of the waves. High-water mark is 30 or 40 feet above winter level, however; and in the summer this rope has to be removed and raised to a considerable height; the river is then wider also.

Meanwhile we took a boiling-point reading in the river-bed, and were elated to find that it read 204° F. At the point where we left the river, just above the rainbow fall, it was 200° F.; and the difference in height

calculated from this was 2,240 feet. That is to say, the river descended 2,240 feet in a distance which probably did not exceed 20 miles. If the gradient was steady, this would give an average fall of 112 feet a mile; but it seemed more likely that rapids and falls would alternate with quieter reaches. In any case, for a river of this size to descend 112 feet a mile was amazing, though alpine streams, of course, often have a much steeper gradient; and there was plenty of room for a big waterfall of 100 feet or so. Thus we were all excited, and determined to see that part of the river which had been hidden from us.

After crossing the river, we found ourselves on the long narrow spur which juts down from the north, and climbing to the summit on a long slant, reached the little Kampa village of Tsachugang, and were installed in the temple.

CHAPTER XV

THE ' FALLS OF THE BRAHMAPUTRA '

The view from this point, 2,000 feet above the river, almost took our breath away. The whole southern horizon was filled with the great white trunk of the Sanglung Namcha Barwa massif which throws out dark furry limbs towards the river. To the right was a magnificent range of icebergs, rising out of a sea of forest, with the snow cornice of Gyala Peri, and the bold crags of Makandro, clear cut against the setting sun. A long saw-edged spur projects southwards from Gyala Peri, overlapping a similar spur which projects northwards from Sanglung—the one we crossed; they appear to meet, without leaving any passage. Then, when you think the gap must be sealed up, and the door bolted and barred, out of the very heart of this tomb, swinging round the spurs, leaping the rocks, comes the Tsangpo just as hard as it can go, a roaring, bouncing, bellowing flood. You see one flash of green, like jade, where the sunlight gleams on a pool far up the gorge, and after that all is white foam. On our right, almost directly below, and plainly visible, the Po-Tsangpo came galloping down from the north, while on our left the Kongbo Tsangpo came reeling up from the south, slewed sharply round a high cliff, and wriggled eastwards again.

When at last one can take one's eyes off that glittering array of snow-peaks, and the rivers crashing and grinding their way through the core, two other points stand

out gablewise amongst the rafters of the world's roof. Opposite us, and facing the confluence is a huge cliff, where the Sanglung spur, which we crossed from the rainbow fall to Payi, is sliced clean off; and a little farther east, another arm of the spur, which separates Payi from Gompo Ne, ends abruptly in a high pyramidal cliff, overlooking the rope bridge by which we crossed the river. Both spurs are heavily wooded above, but the cliffs below are bare.

On December 7th we set out for Gompo Ne, marching along the crest of the narrow spur, with views of the rivers on either side. After marching about 2 miles we descended the almost precipitous end of the spur through thick forest to the river, and turning downstream, soon reached our destination.

Gompo Ne, however, is little more than a name. Amongst a wilderness of gneissic monoliths, rasped and scoured by the shock of the river, then idly cast aside, their raw wounds abandoned to the sly healing jungle, stands a tor whose shape suggests a natural stupa or pagoda; while hard by, crowning another gigantic rock, on whose face are cup-marks, is a real *chorten*. Leaning against this rock are a number of long poles, notched into steps, so finely cut that no human being could possibly climb them, and one might be puzzled to account for their presence, did not one recollect that we are now in the land of *nats*, those elfish spirits which live in the trees and in the lakes, and rivers, and mountains of the twilight forest land. Strong spirits mount quickly to the head, by these ladders. There is also an open shed, where pilgrims such as ourselves, sleep the night; nothing more. Once there was a monastery here, we were told, but it fell into the river; and now the great grey rocks, quarried by the river which storms by 50 feet below, lie around in confusion, while tangled mats of

orchids help to conceal their bald heads, and the crawling jungle slowly buries them.

We walked upstream half a mile to the confluence, but found less turmoil here than we had expected, partly because the water was low. The Po-Tsangpo rushes in at a rather acute angle, and there is a sudden drop in the bed of the Kongbo Tsangpo at this point. The scene is a lively one, though there is not that terrific impact of opposing waters we had imagined. The altitude by boiling-point is 5,247 feet; hence the river drops no less than 388 feet in the 4 miles between this point and the rope bridge, or nearly 100 feet a mile.

The water of the Po-Tsangpo was amazingly blue, but that of the far bigger Kongbo Tsangpo was grey with mud, and quickly swallowed up the blue streak caused by the former.

We slept the night in the shed, and next day retraced our steps along the ridge, and descended to the rope bridge over the Po-Tsangpo below Tsachugang. It was not possible to march up the Po-Tsangpo itself, as the way was barred by a cliff, though only a few days later we learnt that the Mönbas had fixed a second rope bridge across, just above the confluence.

The Po-Tsangpo is here about 50 yards wide, and flows swiftly between high cliffs of closely-banded, finely crystalline, vertically-tilted schist. We underwent the usual tortures on the rope bridge, and it was dark before we were all across and safely lodged in a one-roomed Mönba hut, placed at our disposal by the villagers of Pingso.

Next we ascended one story from the terrace on which Pingso is built to a village called Sengchen on a spur; and then the fun began.

We had only one object in coming here—to explore that part of the gorge which had been hidden from us,

between the rainbow fall and the Po-Tsangpo confluence, where the river turns back on itself to flow north-westwards round the long jagged spur of Gyala Peri. Here if anywhere were the 'Falls of the Brahmaputra' which had been a geographical mystery for half a century; and the final solution—falls? or no falls?—was now within our grasp. Our excitement may be imagined; and the fact that the river between the rainbow fall and the confluence dropped 1,851 feet was favourable to the theory of a hundred-foot waterfall somewhere.

Sengchen is a small Mönba village on a bare windy shoulder of one of the giant spurs which radiate out from Gyala Peri, and is situated just below the great forest belt. This spur is separated from the next one by a deep glen, broken by a high cliff over which the torrent drops in a fine cascade, and the next spur itself is razor-backed and wall-sided, rising from the river in a sheer precipice. The glen is filled with dense jungle, which clings to the opposite cliff.

Looking at these obstacles from Sengchen, our task seemed a formidable one. We reckoned that to cut a path through that jungle, supposing that we could cross the glen and climb the wall to the top of the next ridge, would take three or four days. From the summit we might see the remaining portion of the river—or we might not; to reach the river would probably take another day, and after that there was the getting back.

In trying to picture our feelings, it must be remembered that we had now been in the gorge for four weeks, on top of eight strenuous months of work in Tibet, and were feeling weary. Still, a last effort was required.

We were now joined by a Mönba hunter, who had been everywhere and done everything; and him we questioned closely. No, it was not possible to get along the river-bed, he informed us. No, there was no path to the

summit of the next spur, and the only path which existed—a hunters' trail—went so far back towards Gyala Peri, that nothing was visible of the river. No, it was impossible to reach the river from there. He had never heard of any waterfall, but admitted that he had not seen this part of the river. The only way to see it was to return to Payi and cross the spur to the top of the cliff, whence on a clear day one could see the gorge below. So there we were, and everything looked rather hopeless for the moment; but though we felt checked, we still had a shot left in the locker.

To gain time, and to test the information, we descended 1,200 feet to the river above the confluence, slithering down the steep wooded slope through a grove of huge bamboos; some of these were 40 feet high and 39 inches in circumference 2 feet from the ground, with leaves 10 feet long and 3 feet wide. The hunters who accompanied us amused themselves by slashing through the stems with their long knives; and as the giant herbs fell the leaves split with a noise like the tearing of brown paper.

When we reached the bed of the river we turned upstream, clambering over the boulders, to the point where the cliffs drop straight into the water, and so along the wooded face of the precipice till finally brought up short by smooth rock.

On the cliff here we found *Rhododendron Nuttallii* in bloom, with white trumpet flowers, dyed yellow at the base, fragrant as Madonna lilies (K.W. 6333). This species, which often grows 12 or 15 feet high, with a rather lanky elegance, bore ripe capsules also, from which I collected seed. It is interesting to note that, flowering in the winter, *R. Nuttallii* takes nearly a year to ripen its seed, so that, unlike the wet-winter alpine Rhododendrons, it is active all the year round.

At the farthest point reached in the river-bed, nearly a mile above the confluence, the altitude was 5,302 feet ; and it is at this point that the coarse-grained black mica gneiss of the upper gorge changes to the white mica schists of the confluence.

From amongst the boulders on both banks issue several steam-jets, which make a slight purring noise ; no water is visible, but the steam is blown out at a very high temperature. One we saw later, however, formed a miniature geyser, explosions of steam throwing up little fountains of boiling water.

That evening I climbed the hill above Sengchen, on the summit of which is perched a small *gompa*, and one or two huts. Immediately above the *gompa* the forest begins, and while looking round for a convenient theodolite station, I was surprised to see quite a good path going up the ridge, in the desired direction. I followed it for a short distance, and then as it was growing dark, returned to the hill-top. The moon was shining in a clear sky, and the glacial peaks stood out hard and brilliant above the black forest. Opposite the *gompa* was the deep rent which we should have to cross, and beyond that the next ridge rose like a wall to block our way. Could we reach it ? that was the great question ; and again, should we see the hidden river if we did ? As I gazed across the black gulf, pondering this matter, an amazing thing happened. On the opposite cliff, not far from the top, and perhaps a mile away, a red glow suddenly appeared amongst the trees, kindled brightly for a minute, and went out. I stood rooted to the spot, unable to believe my senses, and almost breathless with astonishment, raking the opposite cliff with field-glasses, waiting for the light to reappear ; but never did it show again. It was just like a signal ; nothing more.

There was only one thing it could possibly be—a camp

fire. Yet why had it disappeared? Was it, after all, imagination, or was it real? After waiting and watching for a time, I turned and raced down the hill to Sengchen, where I told my story. But the Mönbas could not or would not explain the light, and swore that the path was only a hunters' trail.

On the following day Cawdor explored the path up the ridge and followed it as far as a bivouac under a rock: but the path still went on. And in the evening we taxed the Mönbas with lying, to which they confessed quite shamelessly, and promised to take us to the top of the ridge next day! It appeared that the region which we wished to penetrate was the preserve of another hunting tribe of Pobas, with whom the Sengchen men wished to keep on good terms. Hence their anxiety to divert our attention from the forbidden land!

No sooner did we call the bluff than the opposition collapsed. The Mönbas were delighted to come with us! Eight men were collected, six of whom brought their guns with them! For, they argued, they might as well be hanged for a sheep as a lamb. As these warriors were going to trespass in any case, they might as well poach; and in the five days they were away, they managed to account for three head of their neighbours' big game, and two pheasants: they then persuaded us to write a letter to the incensed Pobas, saying untruthfully that the game had been killed on our behalf!

However, these things did not matter; what did matter was that after some days of comparative inactivity we were again hot on the trail. Food for five days was taken, bedding, cameras and surveying instruments; and on the morning of December 12th we started up the mountain on our last effort to find the falls. The spell of fine weather had come to an end, the sky was overcast, and it was drizzling heavily.

Following the hunters' path, we soon entered the forest, at an altitude of about 7,000 feet, and began the steep climb up the ridge. The lower jungle was now left behind, and we entered the temperate rain forest. In the sub-tropical and lower middle rain forest the trees are mixed, passing gradually from evergreen to deciduous; no tree forms forests by itself. Large-leafed Araliaceæ, with palm-like habit, two or three species of *Ficus*, *Dalbergia*, *Acacia*, and other Leguminosæ, and *Rhododendron Nuttallii* occur. As usual in constantly wet regions, climbing plants abound—species of *Clematis*, *Vitis*, *Hydrangea*, and a root-climbing *Ficus* may be mentioned. In the undergrowth are many bamboos and the red-berried *Skimmia*, while on the ground, as though red spar were crystallizing out of the black earth itself, are seen clusters of gaping *Curcuma* fruits, like little grinning scarlet mouths lined with rows of pearl teeth. The epiphytic flora is composed mainly of orchids and Gesneraceæ.

This sub-tropical evergreen forest of the lower gorge passes gradually into the deciduous forest of the lower middle temperate belt, which is almost equally varied, but now contains maple, birch, *Magnolia*, and species of oak. The *Rhododendrons* met with as we ascend are the 'Arboreum' and the scarlet-flowered 'Irroratum.'

Just as some of these trees, particularly the oaks, are beginning to reach gigantic proportions, and to form forests by themselves, we pass at about 8,000 feet into the upper middle rain forest, or temperate rain forest, which is again evergreen. Here the species are few, but they make up in bulk what they lack in variety; for here the very largest trees are found—*Rhododendron grande*, one of the largest of its kind, and a huge *Tsuga*, which together make up most of the forest. In the lower gorge we saw no species of *Larch* or *Picea*; their place seems to

be taken by this *Tsuga*, which in the upper forest is in turn replaced by *Abies*, while *Rhododendron grande* is replaced by another closely allied species.

In the upper middle rain forest, the only epiphytes are small *Rhododendrons*, of which there are at least six species found growing mostly on *Tsuga* trees, and a white-flowered *Cœlogyne*; one would scarcely expect to find an epiphytic orchid growing here in the snow!

As for this *Tsuga*, which has the habit of a Lebanon Cedar, it is a giant, probably attaining a height of 200 feet. At intervals along the path we saw shingles and planks, cut by the woodmen and stacked for seasoning; the *Tsuga* planks measured 15 feet by 8, and were 3½ inches thick! The people call it *cha*, but that seems to be a general name for Coniferous trees, or at least such as are cut for timber.

The discovery of this great *Tsuga* may clear up a certain mystery in Assam, which has long puzzled those connected with the saw-mills in the Sadiya district.

In the year 1900 there was a great flood in the Assam Valley, the origin of which was traced to the Yigrong Lake, by Bailey and Morshead, during their exploration of 1913. During that disastrous affair the swollen Dihang brought down with it besides the bodies of Pobas, logs of Coniferous wood belonging to a species unknown in the Abor Hills. This wood, which is described as strongly scented, soft and light—about 40 lb. to the cubic foot—was sawn up and used in the making of bridges, which twenty-five years later were in an excellent state of preservation; no small triumph in a hot moist climate like that of Assam.

It was not until 1920 that this timber was heard of again. Then, on some of the densely wooded islands of the Brahmaputra, near Sadiya, a number of logs, some of them 12 feet in girth, were discovered half buried by sand

and undergrowth, overgrown with moss, and with the heartwood destroyed ; but the rest of the wood was as sound as a bell. These logs also, some of which had been cut, and others broken off, must have been brought down by the flood twenty years previously, and stranded on these low bush-clad islands when the waters retreated. They were extracted and sawn up, and a vigorous search prosecuted for more, and also for the tree itself, without success. Evidently the tree did not grow locally, though exploration was carried on for some distance. There can, I think, be little doubt that the tree brought down to Assam by the 1900 flood was this *Tsuga*, of which I secured some seed (K.W. 6287).

After ascending the ridge to a height of over 9,000 feet, where the uppermost forest—*Abies* and *Rhododendron*—begins, we started on a long slanting descent towards the burn, and presently reached a boulder, beneath which we bivouacked ; water was found some distance down the hillside and brought up in bamboo tubes.

No sooner had we arrived than two of the hunters set down their loads, and went off into the forest with their guns. Twenty minutes later we heard a bang ; but they returned at dusk rather crestfallen to report a ' magpie,' displaying a pheasant's leg in proof of their statement.

The one thing we wanted now was fine weather, and we crawled under our blankets with a hopeful feeling. Alas ! when we awoke on December 13th, it was snowing fast, and the forest was already draped in white. So thick was the mist that we could scarcely see across the glen ; but when we started at 10.30 snow had ceased to fall.

Descending steeply to the burn, which flowed from one of Gyala Peri's blunt-nosed glaciers, we crossed by a fallen tree, and turned up a rocky glen on the other side.

At an immense block of stone so perched on the slope as to afford shelter to a platoon, a halt was called for lunch.

Then followed a gruelling climb by a muddy snow-clad track to a notch in the ridge above, till we stood on the summit panting while great wads of snow dropped on us from the trees. We had reached our goal ; and far, far below, we could see the Tsangpo for quite 2 miles, white with foam.

There had been a tremendous wash-out on the other side of the ridge, and half the face of the mountain had peeled away, leaving a ragged sore. The descent down this open wound for 2,000 feet was frightful. At last we halted for the night and dug ourselves in, to avoid rolling over the edge. Consequently we presented an odd spectacle dotted about the hillside, a man under a tree stump here, two huddled under a rock there, like a lot of rabbits. For ourselves, we sat on a ledge under a rock, which gave us little enough protection from the rain.

But our indomitable hunters went off as usual, and returned an hour later having shot a foxy red *gooral* (probably *Nemorhædus Baileyi*). In the forest higher up we saw several monal pheasants (*Lophophorus Sclateri*), brilliant with metallic blues and greens, and a turquoise patch round the eye ; at this season they are found in the Rhododendron-Tsuga forest, usually two or three together, the cocks when alarmed uttering a short mournful cry like that of a peewit, but the two notes closer together, the second one rather shrill.

That night when we lay down to sleep, over 2,000 feet above the river, we were greatly agitated as to what the morrow would bring forth ; for we had decided to go down and see for ourselves whether there were big falls or not ; the men said there was a fall of 40 or 50 feet, but their testimony was not sufficiently reliable.

The day broke heavy with mist and drizzle, but about

10 it began to clear up, and we made preparations to go to the bottom.

Four hunters, two of whom carried guns, accompanied us. They moved with the stealth of policemen on night duty, and every now and then the leader stopped, and looked at a cliff a mile or two away, and pointed, and those behind stopped too, and looked, and nodded. The descent down the bed of the stream was unpleasant. We could see nothing of the river, but we had not gone far when we began to hear it. The noise was terrific.

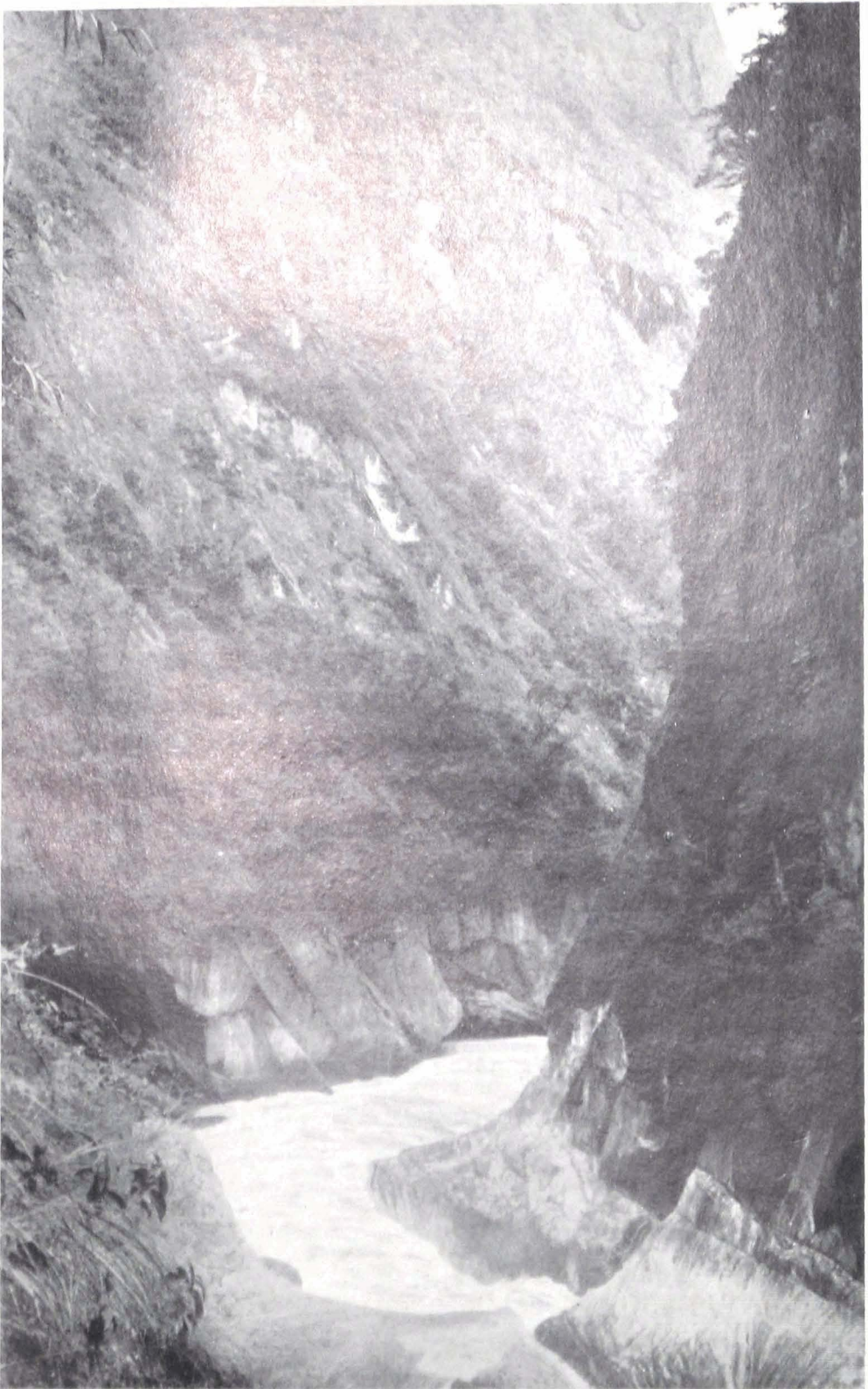
On our left was an almost sheer cliff, but to the right (we faced south) the slopes were not quite so steep and were heavily timbered; where the burn entered, there was even a stretch of beach strewn with boulders the size of houses. It was immediately below the burn that something happened to the river, but we could see nothing—only hear the thunder of water.

At last we got down on to the beach, and all was revealed. At this point the bed of the river, which is jammed with boulders, suddenly begins to fall very steeply. A high wall of rock juts diagonally across from the opposite cliff, and the loaded water has blown a hole 15 feet wide clean through the middle of it. Now all the water poured through the breach, but in flood an immense volume falls over the ledge, dropping down 30 or 40 feet. Immediately below this point, the boulder beach comes to an end at the foot of the cliff; and what happened next we could only guess, for the river, after hurling itself through the gap, rushes headlong into a gorge so deep and narrow that one could hardly see any sky overhead; then it disappeared. We now set to work to scale the cliff; and after felling a small tree and constructing a ladder, we mounted a hundred feet, hauling ourselves up through the bushes. From our vantage-point, we could

see some distance down the gorge ; and this was what we saw :

Below the whirlpool created by the first fall, the river flowed smoothly for about a hundred yards and was a dark jade-green colour ; here it was not more than 30 yards wide, and must have been incredibly deep. Flowing more swiftly, it suddenly poured over another ledge, falling in a sleek wave about 40 feet. Scarcely had the river regained its tranquilly green colour, than it boiled over once more, and was lost to view round the corner. However, we could see it to within a mile probably of the cliff where we had found the Madonna Rhododendron in flower ; and though we crawled a little farther along the cliff, till the vegetation came to an end vertically above the fall, we could see no farther.

Returning to the beach, we took a boiling-point observation, and found the altitude to be 5,751 feet, or 1,347 feet below our camp in the river-bed by the rainbow fall and 504 feet above the confluence. From this point to the confluence was not more than 4 miles, and to the rainbow fall not more than 10. Of the latter distance we had seen perhaps $2\frac{1}{2}$ miles upstream from the pass on the previous day, and about the same distance downstream from above the rainbow fall. We are, therefore, unable to believe that there is any likelihood of a greater fall in the remaining 5 miles which we did not see. Moreover, there is a legend current amongst the Tibetans, and said to be recorded in certain sacred books kept in the monastery at Pemakochung, that between the rainbow fall and the confluence there are no less than seventy-five of these falls, each presided over by a spirit—whether benevolent or malicious is not stated. Supposing that to be more or less true, and supposing each fall or rapid to be only 20 feet high, the difference of height is easily accounted for.



WATERFALL ABOVE GOMPO NE, TSANGPO GORGE

According to our map, it is 14 miles from the confluence to the rainbow fall. In the five days' journey from the Churung Chu to the rainbow fall we covered about 12 miles, so that the distance between the point where the indomitable Bailey had to turn back and the confluence is about 24 miles. This agrees very closely with Bailey's estimated distance of 20 miles, while his estimated difference of height between the Churung Chu confluence and Gompo Ne is 1,780 feet, against the 2,353 feet which we actually measured. Our altitudes give an average fall of 98 feet a mile between these two points; but from the Churung Chu to the rainbow fall it is in fact less, while from the rainbow fall to the confluence it is greater, namely, 1,347 feet in 14 miles, or 132 feet a mile.

The Mönbas told us that this was the biggest fall; and as the river dropped about 100 feet in a quarter of a mile, we had no reason to disbelieve them. We had now discovered the narrowest and most profound depths of the gorge, where the river, only 30 yards in width, descends in falls and rapids over 130 feet a mile; and that was something.

While we had been exploring the falls the other two hunters had gone upstream, across a big torrent which comes down from Gyala Peri and enters the river just above the first ledge; the small geyser already referred to was in continuous eruption at this point. That night we heard that they had shot a takin.

At this season it is possible to go some distance upstream along the beach, but in summer when the water is high, one must keep to the cliffs, crawling through the jungle. The hunters pointed out a notch in the great Gyala spur ahead, now buried under snow, which they said they visited in the summer; from there one could see the river on either side, including the short stretch hidden from us, though no doubt one would obtain an

even better view from the right bank. But it must be remembered that only at a very few points is it possible to descend to the river. Sometimes there is a low-water beach, but it is inaccessible ; sometimes one can get down the cliffs, but there is no beach. A combination of the two is exceptional ; and one can never count on it.

Satisfied with the day's endeavour, we climbed up to our burrow on the hillside, and spent another rather sleepless night, and when the dawn came, we packed and prepared for the journey back to Sengchen.

It was a stubborn climb from our bivouac up the wash-out ; the sun tried to shine, but was driven back and the mountains played hide-and-seek with the clouds.

During a halt two of the hunters decided to hold a shooting competition. A flat stone was selected and a bull's-eye painted on it by mixing a little water with some gunpowder ; the stone was then set up and the marksmen nestled down amongst the rocks 20 or 30 yards away. The tinder rope was lighted, the gun-barrel rested on a rock, long and careful aim taken, and the fork carrying the smouldering rope slowly depressed on to the flash-pan. There was a fizz, followed immediately by a bang, bang, the two guns going off almost simultaneously. Neither hit the bull, or even the stone, but it gave one an insight into the skill and patience required of these hunters in shooting takin, gooral, pheasants and other game.

A word about what we may call the gas-pipe match-lock. It is 4 feet long, 2 feet of barrel and 2 feet of butt, with what looks like a hay-fork hinged to the barrel—combined bayonet and agricultural implement, 'just the thing for your boy at the front.' It is not, however, a hay-fork, nor even a two-pronged bayonet, but a gun rest. The firing apparatus consists of a lever,

one end of which is the trigger, while the other end carries the tinder ; the fulcrum is in the middle. There is also a spring which keeps the tinder fork up and the trigger down. At rest, a small wooden chock is inserted behind the fork, to keep it down ; removal of this chock depresses the trigger and releases the fork, thus cocking the gun. Pressure on the trigger, working against the spring, slowly depresses the fork, which clips the end of a tinder rope, on to the pan ; a coil of tinder rope is carried in a leather pocket attached to the butt, so that prolonged aim can be taken. Also the gun can be carried ready for firing when game is sighted.

Other gadgets include a tooth-pick, tied to the pan and used for cleaning out the touch-hole ; a sleeve, made of gooral skin, which covers the butt and keeps the essential organs dry ; and of course a powder flask, usually made from a takin's horn.

The hunters make their own bullets, which are of lead and about the size of S.S.G. shot. The guns are made in Pome, and cost about 20 rupees. As for powder, saltpetre is obtained from Kongbo, and sulphur springs abound in the gorge.

Thus we see a regular gradation from the Abor jungles, where men use bows and arrows, and hunt with dogs and traps, through the gorge country, where hunting is an honourable profession carried on with primitive guns, to the Plateau of Tibet proper, where men are armed with breech-loading rifles, and do not take life.

When we were half-way up the wash-out, I halted and set up the plane table, hoping to get a good fixing ; on a clear day there is a magnificent view of the snows from this point, unmasked by the stripping of the forest. But it was very cloudy, and I waited two and a half hours before anything showed up. Meanwhile I amused myself

watching the antics of a goral which stood sentinel on a rock high above, while his more timid spouse hung about in the background. He stood motionless as though carved in stone, gazing steadfastly, not at us, but at the forest in front of him ; occasionally he turned his head very slowly, and looked at his mate over his shoulder, as though saying, ' Yes, it's all right, you can come on now.' At last, she plucked up courage and advanced out of the shadow to join him. What they saw to beware of in the forest I do not know ; but I have no doubt they kept a discreet eye on us, though they were out of rifle shot.

After waiting two hours and a half Namcha Barwa showed the tip of its steeple while a man might count a score ; then everything was blotted out again. I therefore packed up, and we climbed to the pass called Sumtonggongma La, 4,528 feet above the river-bed. Slithering down the mud slide through the forest on the far side, we camped under the huge stone where we had lunched on the way up, and slept peacefully under its spacious roof.

After four days of mist and rain, December 16th turned out fine again. We crossed the burn called Ne Chu, and climbed the opposite spur, whence we had a magnificent view over the tops of the snow-powdered Tsuga trees to the glaciers and seracs of Gyala Peri ; there is a small glacier lake at the head of the glen. Presently, from a platform on the ridge, we had an even finer view of the Tsangpo gorge, with Sanglung beyond. By the time we reached Sengchen Gompa, just above the village, the peaks were obscured, but a couple of hours later they cleared and we were able to get our position and fix two prominent landmarks above the river.

Next day we packed up, recrossed the Po-Tsangpo, and at dusk reached Tsachugang once more. Before we

started the happy Mönbas cut up one of the slain takin, and presented us with a large piece of meat; a hunter also brought in another pheasant which he had shot, a specimen of Temminck's grey-spotted tragopan (*T. Temmincki*), called in Tibetan *pab*. These tragopans go about in the forest several together, and are found at lower elevations than Sclater's monal. We offered handsome rewards for any more pheasants, without result, though the hunters went off to see what they could do about it.

Temminck's tragopan is known from Southern China and the Burma-Yunnan frontier, some hundreds of miles south-east of where we obtained it. It is a handsome bird, with rich red mottled plumage and blue face and horns.

We remarked several rather striking trees in the Mönba villages, some of them grown for the beauty of their flowers, others for their fruits; but as they were without leaves or flowers, it was impossible to name them. One, which resembled a *Butea*, and was reported to have handsome flowers, is called Singi-shing (*shing* means tree). Another which bears large bunches of small black berries, like elderberries, from which a cooking oil is expressed, is called Gya-do-gang-shing. We saw trays full of these berries drying in the sun. We also got some quite good oranges.

Before crossing the river, we descended the spur below Sengchen, in the angle between the Kongbo Tsangpo and the Po-Tsangpo, with the object of getting a photograph of the confluence. However, we found that it lay so directly beneath the cliff, that no good view could be obtained from this point.

At Tsachugang our hunters left us. They were a most remarkable body of men, and had behaved splendidly. It was with real regret that we bade good-bye to

the Angel (so-called because his face recalled one of those in Reynolds' picture) and his companions. They were intelligent, loyal and hard-working ; once they had made up their minds to take us to the hunting preserves, they did everything they could to help us.

CHAPTER XVI

CHRISTMAS IN TIBET

In the account of the gorge country I have mentioned various tribes such as Mönba, Lopa, Kampa, and Poba. It is now necessary to say a few words in explanation of who these people really are. That is soon done, because we do not know.

The Mönbas came from Bhutan and from the adjoining Tibetan province of Mönnyul a century ago. The Kampas are the inhabitants of Kam, a vast vaguely defined region of Eastern Tibet of which Chamdo, on the Lhasa-China road, is the principal town. The Pobas are the inhabitants of the semi-independent province of Pome, which lies to the north of the Tsangpo gorge and is watered by the Po-Tsangpo. The capital of Pome is Showa, which the Pobas call Kanam.¹

The Pobas are not, strictly speaking, Tibetans; at any rate they are very different in appearance to the modern Lhasa Tibetans who are the standard and dominant race. Most of the ruling classes in Tibet, the wealthy and aristocratic families, are of Lhasa extraction. Nor is the Poba dialect easily understood in Lhasa.

But clearly the term Tibetan, as we use it, is loosely applied to peoples of very different origin. To us the Kampa is a Tibetan (though no Lhasa Tibetan would admit this) just as much as the Lhasa man is; yet they

¹ Strictly speaking, Kanam is the old capital a few miles from the newer village of Showa. The King of Pome, or Kanam Raja, resides at Kanam.

are obviously unlike each other in every way, as unlike each other perhaps as Celt and Saxon. The fact is there are a number of distinct elements in the Tibetan population, as the most unobservant person can see for himself.

The Pobas may have been the original inhabitants of Tibet for all we know. Here we would merely observe that the Tibeto-Burman family have moved gradually south-eastwards and southwards down the river valleys ; and that the Tibetans to this day call their country Pö, and themselves Pöba ; which is very like Poba.

The Tibetans call all the jungle tribes of the Southern Himalayan slopes Lopa, the term including the tribes known to us as Aka, Miri, Dafla and Mishmi, as well as Abor.

The Lopas we met were undoubtedly Abors from the Dihang River of Assam ; the Dihang being the lower course of the Tsangpo and the main tributary of the Brahmaputra.

So far as our information and experience went the distribution of these various peoples is as follows:—Kongbo Tsangpo. Right bank, Mönba and Lopa ; Left bank, Mönba and Kampa. Po-Tsangpo. Right bank, Mönba ; Left bank, Lopa and Kampa. Pemakö. Mostly Mönba, some Lopa and Kampa villages. Naturally there are mixtures of all degrees, but the tendency will always be for the less civilized Lopa, and possibly Poba, to disappear. For the virile Mönbas occupy the country in considerable force, and more and more Kampas migrate into Pemakö every year in order to escape the crushing burden of taxation. A similar movement is not unknown in this country.

The region down river from the confluence is called Lome or the lower Lo (Lopa) country ; the region up the Po-Tsangpo from the confluence to Tongkyuk is

called Lode, or the upper Lo country. But such Lopas (Abors) as still remain in this part of the gorge, and for some distance below Payi, have been more or less Tibetanized, and have at least adopted the outward forms of the Tibetan Buddhist region.

Nevertheless, several curious religious rites can doubtless be traced to a more primitive worship; for the Abors at least are animists pure and simple. Although no village is too small or too poor to possess a *gompa*, complete with priest, yet an eye is kept on the village spirit. Usually he lives in a hollowed tree-trunk, up-ended outside the village gate and covered with a flat lid kept down by a heavy stone, lest he should try to escape. In the grove hard by, there will be a mound of stones and broken cooking-pots, inscribed with prayers, and a tray full of wooden billets, like tent pegs, painted black, yellow and red in alternate stripes. This grove is usually surrounded by a fence made of wooden spears similarly painted.

On December 18th we started northwards up the valley or rather gorge of the Po-Tsangpo. First we had to climb high above Tsachugang, and cross a big shoulder, where the river bends sharply. From a lofty scree which fell away steeply to the Po-Tsangpo, we might have had a glorious view of the snow-peaks again, but they were muffled in cloud. Five hours' marching through the forest brought us to an open shed where we spent a comfortable night. Here we were met by a fresh relay of porters from the other side of the river under the command of a jovial headman; and the Tsachugang people went back.

The people we met in this valley were very different from the alert intelligent Mönba hunters of Sengchen. We had indeed some queer coolies whose characteristics were briefly summed up in their nicknames, Weary

Willy, Joe Beckett, and Little Ikey, for example. Still, they made good.

On the 19th we crossed a pass called the Karma La, 8,402 feet, but again the view was spoilt by a brooding storm. However, as this was the last point from which we would be able to see the Assam Himalaya and the river confluence, we decided to wait for better weather. From the north side of the pass we had a clear view up the Po-Tsangpo, which, as Cawdor said, was as blue as a solution of copper sulphate. It was backed by a fine range of snow-peaks to the north.

A steep descent from the Karma La brought us out on to a cultivated terrace, where stood the small rickety village of Pongcham. Lopa houses are miserable one-roomed sheds with a paling of split logs for wall, a raised wooden floor, beneath which the pigs live, and the usual shingle roof. There is no cooking-range, not even a mud one, and the family porringer stands over three stones in the centre of a square hearth. The cooking-pots in these parts are made of stone, beautifully shaped and chipped, with lugs for handles; but they are rather brittle. When broken, prayers are scratched on the pieces, and show up white on a black ground, and these inscribed fragments are placed on religious mounds.

We needed a whole house to ourselves at Pongcham, which meant that some family had to turn out of hearth and home for the night; but they did not seem to mind much.

The weather next day looked unpromising, but we decided to go on to the next village and wait there for a fine day. Accordingly we did a short march of 4 miles, crossing two big torrents and two spurs, to the next terrace, where stood the Lopa village of Lubong. On the right bank of the river was a large village called Pemaden, connected with Lubong by a rope bridge.

The weather was quite hopeless on the 21st, so we stayed where we were.

December 22nd, however, was a radiant day, the temperature having fallen in the night. Leaving Lubong at 8.30, we reached the Karma La in less than three hours, and had a superb view of the Assam Himalaya, from Namcha Barwa to Sanglung; we could see a long way to the east also, but there was nothing there, except aching blue sky. Just across the Po-Tsangpo, on our right, were the glittering ice-ribs of Gyala Peri and Makandro, looking absurdly close.

We spent four hours on the pass, bathed in sunshine, photographing, mapping, and writing notes; and it was 6 o'clock when we got back to Lubong.

A curious point now struck us. When we reached Gompo Ne, at the confluence of the Kongbo Tsangpo and Po-Tsangpo, we had undoubtedly passed through a great range of snow mountains. The Namcha Barwa-Gyala Peri line was behind, i.e. to the west of us. On the other hand, both Namcha Barwa and Sanglung still lay due south of us; that is to say, we were not actually on the southern slope of the Himalaya, any more than we had been at Gyala.

The question, then, was, had we or had we not crossed the Himalayan axis? If that axis turns northwards, or rather north-eastwards, from Namcha Barwa through Gyala Peri, we had crossed it; and so obviously we should have to recross it again in order to reach the plateau. But where? As a matter of fact we crossed no high pass till we crossed the Nambu La above Tongkyuk, and that was far away; the Karma La, under 9,000 feet, was too insignificant.

On the other hand, if the Himalayan axis continues eastwards through Sanglung and the peaks beyond, to be cut through by the Tsangpo still farther east where

that river bends to the south, then we had not crossed it. In that case, what range of mountains had we crossed, and through what range has the Tsangpo cut its deep gorge ?

It has been assumed that Gyala Peri stands on the main axis of the Himalayan range ; but there is no geological evidence to support the statement, while the topographical evidence is far from complete. From Gyala Peri a great range of snow mountains runs northwards, up the right bank of the Po-Tsangpo, into Pome ; what becomes of them we don't know. On the left bank of the Po-Tsangpo are more snow-peaks, and the river has cut a gorge between them, just as has the Tsangpo between Namcha Barwa and Gyala Peri. But we lack all proof that this is the Himalayan connection.

From Namcha Barwa the Great Himalayan range is continued eastwards in Sanglung. So much is admitted. Beyond Sanglung is a much lower snow-peak, and then comes a group of three rocky peaks. After that the mountains sink right down ; but if a direction is followed east-north-east high snow-peaks are again met with. There is no proof so far that *this* is not the main Himalayan range, and it is certainly a more natural direction in which to seek it. Gyala Peri, indeed, may have nothing to do with the Himalaya ; it may stand on the Trans-Himalayan range. Just as the Himalayan range, east of Bhutan, sinks down to lower levels, to rise again suddenly in the great Assam peaks, so the Trans-Himalayan range, which as we have already seen crosses the line of the Tsangpo at Trap, may rise up here in the peak of Gyala Peri.

After crossing the Karma La we rapidly got into drier country.

Many of the sub-tropical trees and climbing plants

disappeared and instead we found forests of pine and Rhododendron. From Lubong we descended a thousand feet to the river, and then almost immediately began to climb up again, over cliffs of crumbling white schist. Presently we reached a large village called Thongdem and halted for lunch. Pushing on again we crossed a big stream, and soon reached the Rong Chu junction, and half a mile farther on a rope bridge over the Po-Tsangpo.

It was now dusk ; nevertheless, we set about crossing the river, having no mind to spend the night here on the cold rocks. However, the crossing took a long time, and it was pitch-dark before the last man landed on the sandbank below the village of Trulung.

The rope bridge, which consists of two ropes, is fastened round boulders on either bank and raised up clear of the water by means of wooden tripods. In the summer it is removed from here and fixed at a much higher level.

We now lit pine-wood flares and formed a torchlight procession, looking for Trulung, which we found at last—two wretched houses.

On the following day we followed the right bank of the Po-Tsangpo a little way, and climbed up flights of steps over the shoulder of a high spur into the valley of the Rong Chu. It was here that the Pobas had ambushed the Chinese troops when the latter were fleeing from Pome, and killed them to a man.

The altitude of the river-bed at the rope bridge was 6,474 feet, compared with 5,247 feet at the confluence, about 20 miles distant, giving a fall of 61 feet per mile for the Po-Tsangpo. For the next few days the weather was gloriously clear, with ground frost at night and brilliant sunshine all day. We marched through pine forest to the junction of the Tongkyuk River with the

Rong Chu, and on December 26th reached Tongkyuk, much to the relief of Dick and Sunny Jim, who were on the point of sending out a search party. They had arrived seventeen days before. Here the Walrus, Shock-headed Peter, and the other Gyala folk left us to return to their homes. Their route lay up the valley of the Rong Chu to our old base at Tumbatse, and over the Nyima La; they would be back in their homes long before we reached India. They had been with us six weeks, and we were sorry to part with them. But we rewarded them for their services, and they went their way well satisfied with their treatment.

We stayed one day to repack our things and prepare for the long journey across the plateau; and then on December 28th we started, leisurely following our route of August up the Tongkyuk Valley. However, we got no farther than Paka the first day, as we had a mind to explore the big valley which comes in here from the north, as far as the village of Lumo. The Tongkyuk River splits into two at this point, and we went up the left branch a couple of miles to the village, which is a large scattered settlement; our main caravan, however, crossed the river by the bridge just below Paka, continued up the right bank for a couple of miles, and crossed over to the left bank again above the junction of the Lumo stream, just as we had done in August.

There are no villages above Lumo, but there is a trail which leads over a pass into the Yigrong Valley, though it is said not to be used nowadays. At the head of the valley we could see the snow-peaks of the Salween divide.

Crossing the stream by a bridge just above Lumo, we followed the right bank back to the junction and then turned up the main valley again, rejoining our party in camp at dusk, where the four-foot *Primulas* grew.

December 30th was a gorgeous day, and we made

fair progress, though there was much ice on the road where streams had overflowed and refrozen, and several animals came a cropper. We did not attempt to reach the *gompa*, but camped in a meadow about half-way, after stopping to collect seed of the cobalt *Cyananthus* (K.W. 6082). This little plant growing on the steep granite cliffs on the sunny side of the glen was scorched and shrivelled and almost lost in the khaki-coloured grass, but we found quite a number of plants which yielded a good packet of seed. The meadows, of course, had been cut down, and against every tree a scaffolding had been reared on which hay was drying.

We had 17° of frost during the night, and the last day of the year dawned as fresh and clear as though there were no such things as clouds. Alas! Soon after we started a cold wind sprang up, the sky became overcast, and there came that unmistakable feeling of snow in the air. We soon reached the big moraine at the junction of the two glacier valleys, and could see a high snow-peak on the Salween divide quite near. At last we were within touch of that great range we had first seen from Tsela Dzong seven months earlier. But the pastures were now brown and dead, the herds had packed up their tents and gone down to warmer regions, and the wide flat valley looked most desolate and forlorn, though there was not much snow.

Early in the afternoon we reached the little *gompa*, long since deserted, and entered into possession. Our desire was to spend the following day here fixing some peaks on the Salween divide, completing the work from the Nambu La. However, it was not to be. That night it began to snow, and the storm continued with scarcely a break for fifty hours. All through January 1st we stayed in the cold draughty little house, huddled round a fire, and so through January 2nd. That night

we learnt that food was running short. So we held a council of war and decided that if January 3rd was fine we would hang on till the 4th, but if it was cloudy, whether it snowed or not, we must move. Although the sheltered thermometer registered 13° of frost on the 2nd, and 12° on the 3rd, it would have been very much colder had the sky not been overcast; and we saw no hope of a change till the temperature fell considerably lower than 19° F. Moreover, it was necessary to cross the pass before it was blocked, which might happen any day now; if we could not cross the Nambu La, we should have to return to Tsela Dzong, lengthening the journey considerably and failing to complete our map.

Accordingly on January 3rd we abandoned the fixing of our snow-peaks. The sky looked as sulky as ever, though for the moment it had ceased to snow, when we left the cold gloomy *gompa* and trudged up to the pass. Here, as already related, I tried in vain to collect seed of two dwarf Rhododendrons which were buried beneath 5 feet of snow.

We camped in a meadow on the west side, and awoke on January 4th to find it still snowing; but by the time we reached Lo it had ceased. Nevertheless, it was a cheerless march down the long valley that grey day, all the peaks still hidden behind lowering clouds surcharged with snow, and the bleak forest so glum and still under its white mantle. In one respect we were better off than in August; the boggy meadow was now frozen hard, and we could get along anywhere without fear of being suddenly engulfed.

This time we were more warmly welcomed at Lo than we had been in August, owing to the astonishing fact that we had paid for our transport. Such a concession was to be encouraged by every possible means.

Accordingly, two quite decent rooms in the best house were swept and garnished for us, which was just as well, since it was a miserable night, the wind whistling down the snowy valley.

Next day we reached the lake, and halted at Je. The villagers of Je have the distinction of being the only people who fled from us on sight, or when we stared at them in reprisal for their insensate curiosity. Nor were they very solicitous about our comfort, at first refusing even to give us a fire in our room (which was also a chapel), for fear of damaging the vestments. Finally we insisted. The lake, too, shared in the general gloom—a long narrow leaden strip of water stagnant at the bottom of a big snow-clad depression. It had looked less aloof in August.

On January 6th we thought it really would be fine, but after a very half-hearted attempt to clear, it stayed thick, and we lost our last chance of seeing the Salween divide, though the needle peak of Namla Karpo just pricked the clouds.

We reached the end of the lake in $2\frac{1}{2}$ hours, passing the pretty island monastery of Tsosang; then, crossing the stream by a dangerous-looking bridge, we halted for lunch. In the afternoon we went on down the wide stony valley, where the snow had drifted patchily but was fast melting, to Shoga Dzong, reached on January 7th.

Our intention was to travel from here to Atsa and so round to Gyamda, as we had done in August in order to complete our map; but hearing that the pass was blocked, we decided to go up the valley only as far as Pungkar, and then if the pass was still blocked, to return to Shoga, and so to Gyamda by the main valley. Tom, who had purchased a wild white horse with the idea of selling it in India for more than he gave for it, had

been badly shaken by a fall the previous day, so at his request we left him behind to recover.

The weather now turned fine and cold; the wind had a venomous bite in it, but the bogs had dried up, and in spite of the short days, we were able to get over the frozen ground at a fair pace.

Travelling leisurely we reached Drukla on the first day, only to find the monastery almost deserted. The Labrang Lama had been summoned to Lhasa, where he was doubtless pleading for his life; sixty monks had been locked out for misdemeanour; and a few dejected *trapa* who had barely escaped the same fate, hung about the courtyards seeing red, though probably feeling a little blue.

The church, in a bold endeavour to keep up its reputation for hospitality, sent us a hunk of butter with what looked like a question mark engraved on it; but thanks to the cold, it was so brittle that it splintered on being struck. As we marched up the valley the weather grew very much colder. Everywhere the people had gone into winter clothing—long sheepskin coats, fur caps, and top-boots; but gloves they had none. From the cliffs on either side ice hung in long stalactites, which had become joined together as they guttered in the warm midday sun. Large grey cranes stalked over the gravel banks by the frozen river and hundreds of pigeons oscillated their heads on the fallow. Everything was in the grip of a ruthless winter, and between blasts an ominous silence reigned, broken only by the occasional crack of ice as it choked the gurgling river, or the rustle of babblers amongst dead leaves under the bushes. At this season a cup of hot buttered tea, the more oleaginous the better, was welcome, and the Tibetans consumed large quantities.

In Tibet one sees vast numbers of stones on which

prayers are neatly carved—particularly the national prayer, ‘*O mani padme hum.*’ These are built up into regular pyramids or walls which stand in the middle of the path, that the priests and laymen may be able to walk round them with the hope always on his right hand. We had often wondered at the almost universal skill, as we supposed, in carving these prayers; for we believed that every passer-by had added his stone to the pile. And so no doubt he has—but he did not carve it himself. There are professional stone-masons who do the carving, and are engaged by the day to carve as many ‘*O manis*’ as can be done in the time. We saw one at work at Rinchengang; he had a pile of rounded water-worn stones in front of him, and having roughed one side, he cut out the formula with the point of a small iron chisel, driving it round in the desired direction by means of a hammer. He worked with great precision and at a rapid rate, so that we marvelled at his skill. Usually the prayer is just carved on the stone without any frills, sometimes plain, sometimes coloured; but in Kongbo we saw frequently a design like a lotus flower—such a thing as would pass for a lotus flower in a wall-paper design at any rate—with one word written on each of six petals arranged in a circle. The script used is commonly Tibetan, as printed. But one sometimes sees the ancient Hīnīd script, engraved on the outside of prayer drums particularly.

We had an instance of Tibetan honesty here. On our way to Atsa in the summer a tin of tea had been lost; and being very short at that time, we had sent a man back to look for it, without result. Another traveller passing that way some days later, picked it up and carried it to the nearest village, where it had been kept ever since. It was now restored to us intact.

At Pungkar we were greeted by a large crowd, the

people being anxious to see such prodigies. Had not Cawdor cured a sick man there? Of course others now disclosed ailments real or imaginary, but we thought it best to leave well alone; it was no good overdoing a thing.

After taking observations for latitude at Pungkar and Drukla we returned to Shoga Dzong, where we arrived on the 13th. Tom was better, but a difficulty now arose over his pony which we could not take with us through Bhutan, the way we proposed to return. He therefore decided to leave us at Tsetang and return direct to his home in Darjeeling, via Gyantse. This we gave him permission to do, the more readily as he had lately been giving trouble over drink, to which he was addicted; when drunk he lost his memory.

On the 14th we started for Gyamda and marched down the narrow valley to Namse Gompa, situated on a cliff in the angle where the Pasum River joins the Gyamda River. The *gompa* is falling down—has been for years by the look of it, and a fund had been opened to repair it. We were shown a list of subscribers—many of the names had been written so long ago that they were no longer legible, but nothing has been done yet. However, we paid our subscription.

From Namse we had an uneventful march up the valley to Gyamda, reached on January 18th.

Our friend the *Dzongpön* of Napö, who was expecting us this time, welcomed us warmly. First he gave us dilute tea, with milk and much sugar, Indian fashion, followed by a dinner with rich meat dumplings and raw spirit. A host of servants attended, one to pour out the tea, another to pour out the wine, a third to look after the fire, and so on. For breakfast we were given a dish of chopped carrots, turnips, and meat, which we supplemented out of our own resources.

Just as we were finishing our meal a troupe of dancers arrived and asked leave to perform before us. We gave our permission, and a large crowd of sightseers collected in the courtyard. There were no less than twelve in the troupe, which included children and youths, maidens and men. The men wore flat kite-shaped spotted masks which gave them a grotesque appearance. There was also a band—drum and cymbals; the girls spun on their heels till they looked like scarlet and green tops; the boys threw cart-wheels; others sang. When we had paid for the entertainment, we went on our way.

This time we did not attempt to reach Gyamda in a day. Instead we crossed the river by a temporary brushwood trestle bridge—of which we saw several, and reached a place called Pangkargang, where we spent the night. The river had fallen a lot now, and was nowhere more than 50 or 60 yards wide, and 3 feet deep; the water was crystal clear and full of floating ice. Snow still lay in patches on the slope with northern aspect, and we had severe frosts each night. Luckily there was not much wind, and in the middle of the day we could sit in the sunshine and enjoy our lunch.

On the afternoon of the 18th we reached Gyamda, crossing the almost frozen river by a temporary bridge; work on the new cantilever bridge had not yet been begun. We had wretched quarters, but were much cheered by getting our letters from the Post Office, the first mail we had received for nearly four months.

CHAPTER XVII

WINTER ON THE PLATEAU

As we had been unable to make the round trip from Shoga Dzong via Atsa to Gyamda, we had to content ourselves with two converging marches towards the Salween divide. That towards the Pasum Kye La, which ended at Pungkar, has already been referred to; from Gyamda we made another up the China road as far as Gogon Gompa, two marches short of the Tro La.

Though it was comparatively warm in Gyamda, at least while the sun shone, it grew rapidly colder as we ascended the narrow valley, where the snow lay deep under the trees on the northern slope. We reached Laru after seven hours' marching on the evening of January 19th, and took an observation for latitude. That night the sheltered thermometer fell to -1° F.

On the following day we reached our objective in three hours. Gogon Gompa crowns an almost sheer isolated crag 200 feet high in the angle between two streams, the smaller from the Tro La, the larger from Trigung; a wooden bridge spans the Tro La stream, which, however, was frozen solid. A little above Gogon tree growth ceases altogether, except for a few stunted junipers clinging madly to the cliffs, for the dry cold wind can desiccate as well as freeze. However, we were able to get a little firewood at Gogon, though we had to eke it out with yak dung; and glad we were of a smoking fire, even in the tiny cell where we slept and ate, unable to turn round, when the temperature fell



TRAVELLING MINSTRELS

to 4° F. It would have fallen much lower only the sky became overcast.

The Tro La was probably open or would be in a day or two, for we met some pilgrims who had recently crossed the pass, and the post runners were travelling. As a matter of fact the passes on this great highway from Lhasa to Peking are open all the year round save for temporary closures after a storm. At nightfall we looked down on the twinkling fires of a large yak caravan camped on the plain below, but early next morning they were gone. They had come from the Hopa country, a month's journey distant, on the northern confines of Kam, bringing salt, and were returning with *tsamba*.

There is great traffic between the northern plains and the southern valleys of Tibet. On the Chang Tang and around the headwaters of the Salween are many salt lakes, but the country is too bleak to grow even barley, and is inhabited chiefly by wandering pastoral tribes, who take their flocks up there in the summer. In the winter these folk bring down salt to the agricultural districts of South Central Tibet, in exchange for flour. Their flocks supply them with milk, butter, cheese, meat, and clothes; tea is imported from China.

However, we had no time to cross the Tro La, and on the 21st we turned south on our tracks again, reaching Gyamda on the 22nd. Considering the long bitter winter experienced in these valleys, it was heartening to see Rhododendrons sleeping peacefully on the snow-bound side of the mountain. These particular species, at any rate,—they belong to the 'Taliense,' 'Anthopogon' and 'Lapponicum' series—must be of a cast-iron hardiness, seeing that without any protection whatever, they have to face temperatures well below zero Fahrenheit, or say 40°–50° of frost in the open. Other plants I noticed here were *Meconopsis racemosa*

(a form of *M. horridula*), *Gentiana Waltonii*, *Primula microdonta*, *Androsace*, and *Incarvillea*. It is often easier to see a plant in fruit standing up like a lonely skeleton, than it is to see it in flower, smothered up amongst a host of others; but of course one must needs know well what it looks like when stripped for the winter fray.

We stayed at Gyamda over the 23rd to write our last mail, and on the 24th set out for Tsetang, following the Lhasa road. This branch of the river is larger than the Tro La branch, and the path, which keeps to the left bank, is not particularly good. It is easy to see that one is approaching the plateau; the spurs flatten out towards their summits, the country becomes undulating, the houses have flat mud roofs instead of the wooden pent house roof of Kongbo, and granite replaces the slates and schists of the Lower Gyamda Valley. After passing a small monastery and crossing two big streams which roll down from the grassland country in wide shallow valleys, we reached Chinda, and found ourselves amongst a people rather different from the Kongba, in dress at any rate; for though the women still varnished their faces till they shone like Cherry Blossom Boot Polish, yet they wore on their heads the butterfly net-shaped wooden ornament, bound with scarlet cloth and studded with semi-precious stones, as turquoise, which one sees in Lhasa itself.

After a bitter night we continued up the valley, presently crossing over to the right bank by a good bridge. It was a glorious sunny day. Hour after hour we marched. The sun went down, and immediately the great cold laid its grip on the valley. Darkness fell, and the velvet cloth of night was punctured by thousands of star holes. And still we marched on. I thought we never should reach a house—the valley

seemed quite deserted now, and the chances of a house or a village grew more and more remote as the stream dwindled.

Suddenly we heard a faint shout. Lights appeared. We skimmed over a bridge—the river was frozen solid—and were met by men who held aloft torches of rolled birch bark, which made a delicious sound like sizzling bacon. Five minutes later we were welcomed by a crowd of people at the tight little village of Numari, having covered 17 miles. That night the temperature fell to -6° F. or 38° of frost under cover; yet there were bushes by the stream—*Potentilla fruticosa*, *Berberis*, *Hippophae* and the three cast-iron *Rhododendrons*.

If our march of the 25th had been unpleasant, that of the 26th was purgatory. We started as usual in lovely weather, continued a couple of miles up the valley, and turned sharply, following up a steep glen towards the pass. Here we met the wind. The climb to the pass was long and arduous; and yet the frozen stream was lined with all kinds of what had once been alpine flowers. I saw *Primulas*, *Iris*, *Meconopsis*, *Pedicularis*, *Morina*, *Polygonum*, *Saxifrage*, *Delphinium* and several others; no doubt we had found them all in flower before—there is a certain monotony about the flowers on the plateau, and you may be quite certain of finding the same things over and over again. Still, in this hell of ice it was pleasant to think that flowers had bloomed some time and would do so again.

At irregular intervals we passed Chinese mile-stones, but they told us little of the real distance, though it was said to be four days' journey, or 110 Chinese miles, from Numari to Lhasa.

In the middle of the afternoon we reached the summit of the Kongbo Pa La. The sky had clouded over and the wind was raising clouds of dust; but Cawdor

managed to get a boiling-point observation on the pass. For the last 2 miles the stream was a solid glacier, having guttered and solidified over and over again; the valley, which was very stony, widened out to a mile here, and the summit was a small plateau, with low ranges of barren hills on each side. Soon after 3.30 we began to descend a forbidding valley and were met by frightful gusts of wind which hurled the gravel in our faces and forced us to take shelter.

After a time we saw some high rocky snow-clad peaks to the south-east, in the direction of the Lung La, and probably on the Trans-Himalayan range. Just before dark we passed a post-house, and then for more than an hour picked our way over very rough ground by the growing stream to Tsumara, the most benighted, cold, and filthy village we had yet seen; though indeed we could see nothing now and were glad to tumble into a draughty room where the atmosphere was foul with the smoke of a yak-dung fire.

Morning revealed it in all its naked horror and squalor; not even the sunshine of a Tibetan winter could gild the foul hovels and black tents which were Tsumara. A small official with an armed escort, bound from Lhasa to Chamdo, arriving early in the afternoon, had taken possession of the only decent tenement in the block, which had actually been prepared in advance for us; and when we arrived after dark, he, being by that time in bed, refused to give it up, despite Tom's vehement expostulation. In the morning, however, he was worried and came to us bearing the white scarf of friendship and requesting an interview; whereupon he apologized for his discourtesy of the previous night, and begged that we would not report him. Nothing was to be gained by doing so; and having told him before his inferiors that we thought him a churl, we let it go at that, though

our crest was somewhat fallen. We had indeed to be content with our moral victory, for nothing could blind us to the fact that he had scored off us. Rightly or wrongly he had refused to budge, and without making a scene we were unable to compel him.

The Government party, well mounted with rifles slung on their backs, now trotted off on their 400-mile journey to Chamdo; while we left the Lhasa road and crossing the frozen river, turned due south up a wide flat valley. We had not gone far when we met a grain caravan of several hundred yak, just preparing to camp in the brown pastures. It is their custom to start very early, and when they reach grass, to camp for the day in order to allow the animals to graze. These people had come all the way from the Hopa country, bringing salt to Oga Dzong, which is a distributing centre for grain.

The valley widened out and the sluggish wandering streams had formed wide shallow lakes, now covered with ice, on which our ponies slid and fell. It would have been difficult to tell where the actual pass—called the Kamba La—was, had it not been marked with a cairn. Southwards we rejoiced to see a group of glittering snow-peaks on the north bank of the Tsangpo, close to Oga Dzong; it was the Trans-Himalayan range, which we knew for the first of the three great barriers which still separated us from India. The plateau, with its long smooth roll, seems to spread out like the ocean into the *ewigkeit*; but once you catch sight of those great ragged escarpments thrust up through the even swell, you know that you are approaching the edge; the crust breaks here, and clambering over twisted girders, you drop swiftly down from the roof of the world to the fair gardens where men dwell. But the rim was far off yet.

We saw some gazelle scampering off across the dead

pastures and later put up a fat hare and a covey of partridge ; so the landscape was not so entirely lifeless as it looked. The descent towards the Tsangpo was gradual at first, but we had to go down much farther than we had come up and soon found ourselves in the usual deep gravelly trench, in which a few stunted bushes began to appear.

We had hoped to reach Oga Dzong and had indeed been assured that we should do so ; but darkness coming on when we were still some miles away, we turned aside from the stream and took shelter in a solitary house.

Resuming our march down the valley on January 28th, we presently reached the monastery of Dzinchi, which was as clean as a new pin. They had expected us here the previous evening, so we halted and drank milk with the monks.

Below Dzinchi the valley is well cultivated and there are several villages. We reached Oga Dzong in an hour, and found crowds waiting to welcome and stare at us. However, we found good quarters and a wood fire, and the night being clear were able to get an observation for latitude. The newly appointed *Dzongpön* called on us and promised us transport for next day, we being still three days' journey from Tsetang.

After our half-day's rest we continued the march, crossing the Kamba La stream by a bridge and slanting up the dry hillside to a low pass, whence we had a good view up the valley towards the Lung La ; also we could see glaciers on the high peaks between Oga Dzong and Trap.

Descending a funnel-shaped valley, we soon joined another stream from the north and changed transport at a village. This stream joins the Oga Dzong stream a little lower down and the combined river flows into the Tsangpo above Trap. Crossing this second stream,

we again started up the mountain to a low pass and here we caught the full force of the wind. In a flying fog of grit, which rasped and stung our faces, we descended to the Tsangpo. So thick was the air here that sometimes we could not see across the river; its surface was flogged into waves by the dusty gale.

We noticed that the river was higher and swifter than in April and the water more muddy.

After a tiring march in the very teeth of the wind, blinded and choked by the dust, we halted at a miserable hut. At nightfall the wind ceased abruptly and it was so still we could hear the brash ice clinking against the shore. But the fine dust cloud hung over the valley till morning and the setting moon peered redly through.

Two days more we marched up the valley. By daylight the fine cloud of dust had sunk down and the sun, leaping up over the mountains, flashed its serene rays into the harsh valley. The sky was like a blue-tiled dome. It was warm and peaceful. Suddenly, without warning the wind roused itself and blew steadily and with ever-growing fury, till nightfall. It was weary work tramping over the endless sand-dunes, with the dust penetrating everywhere; by evening we felt stony all over, like a Saxifrage. The curious thing was that the wind always blew down the valley, never up. In the spring it was just the reverse.

Passing several monasteries and a large *dzong*, dust-coloured like the cliff against which it was built, we reached the ferry opposite Tsetang on January 31st, and crossed over in a barge whose bow-post was carved into the likeness of a horse's head, giving a Viking touch to the craft; but it was scarcely as swift. This was the first barrier.

After the villages we had been accustomed to, Tsetang with its chortens and monasteries and houses seemed

a most imposing place. It was teeming with life and trade, donkey caravans coming and going, oxen, mules, ponies and yak passing to and fro, herds of goats skipping and butting, and other signs of enthusiasm. But it suffered from the same devastating wind and powder as places farther down the valley.

We were met and fed by Atta Ulla Khan, the Ladaki trader, who, hearing of our approach, had secured rooms for us. The town was very full, as brisk business was being transacted. Atta Ulla Khan sent his son down to the willow marshes with his gun where there were thousands of birds—geese, yellow duck, mallard, teal and cranes, as well as crows, magpies and sparrows; and he returned with two fat geese, which we were to take with us on the road.

Already, after over ten months' travel, we saw ourselves in India. The worst of the journey was over—or so we thought. From Tsetang we had only to turn due south, and cross the Himalaya, and in ten days, or in a fortnight at the most, we should be in India. Happy thought!

As a matter of cold fact, it took us more than three weeks to reach India. Making good marches we had done the journey from Gyamda to Tsetang in eight days, and had we not halted for half a day at Oga, might well have done it in a week. We had been enabled to do this partly because, marching westwards since leaving Tongkyuk, we had gained a little on the clock each day and thereby saved daylight—at least so long as we always started at the same hour. But from Tsetang southwards we began to lose way; and though we reached Tsöna Dzong in a week, after that we had to take things leisurely.

It was pleasant to be back by the great river, and away from the raving winds which sweep over the

plateau; and to see trees again, poplar, willow and elm, row on row; most of them were standing in water now, left by the summer floods. But it was bleak enough even here, with the heavy blanket of dust lying over the valley towards the Holy City, and the bare trees and naked rocks; even sunshine and blue sky cannot, in winter, breathe life into these dead bones; for, after all, the Tsangpo Valley here is only a shallow trough in the great plateau, and Tsetang itself is nearly 12,000 feet above sea-level.

Atta Ulla Khan tried to persuade us to rest a day in Tsetang to see the bazaar; but we were keen to get back to India without wasting a day more than was necessary. Nor did we altogether fancy the prospect of crossing the Himalaya in the depth of winter; the sooner that ordeal was over the better we should be pleased. So on February 1st, having procured fresh transport, we started, the Ladaki riding with us as far as Netong Dzong, where he said good-bye. Tom also left us here, to return direct to Darjeeling by the way we had come, and Dick was promoted in his stead.

Our road lay up the wide Yarlung Valley, which diverges from the valley by which we had approached Tsetang in April at Netong. Wide and stony, with only a small stream flowing through it, the Yarlung Valley is nevertheless well cultivated and, for Tibet, quite thickly populated. We passed through numerous villages, and saw a number of small but neat monasteries, perched on cliffs or hidden away in glens.

These flat stony valleys, whose width is out of all proportion to the stream, seem to be the natural result of a climate which forbids tree growth. Every brook which comes tumbling down the mountain side opens a cavernous wound in the flank of the main valley. There is nothing to hold up the soil, or to shore up the

sliding hills, which during the brief but heavy rains of summer deliquesce like sugar. The only woody plants we saw were small brushes of Hippophae and Buddleia by the stream and in the villages clumps of poplar and willow.

The houses are small, low cubes with flat roofs made of slabs of schist or slate laid on a foundation of wooden sticks which in turn are supported by the main beams. There is a low coping all round the roof with a small tower at each corner. The outer wall is usually white-washed.

Earthenware pots are much used in these parts. The fire is made in one, grain kept in another, water drawn from a third; some of them have spouts and handles, some have perforated bottoms, some are just pots.

Making short marches, we slept the night of February 2nd at a village called Nyamoshung, and on the 3rd faced the Yartö Tra La, which crosses the Trans-Himalayan range at an altitude of 16,700 feet. It was a long toil up to the pass, and though there was very little snow, thanks to the dryness of the climate, frozen streams sprawled and spread across the steep track, rendering it very treacherous. At the summit we came out on to a wide saddle, floored with turf; to the west rises a cluster of rock and snow-peaks, on which we observed several glaciers. Up a glen we noticed a small stone village, almost invisible against the boulders, but said to be inhabited all the year round; as it is well over 16,000 feet, this is truly remarkable. There is a hot spring hard by; and indeed such a concession would be necessary.

From the tip-top of the pass, we gazed eastwards over a bare and gloomy scene. It was 5 o'clock on a grey February evening; nothing was visible but wide earth plains, chequered with tufts of coarse grass, and beyond

that the jagged rim of snow-striped mountains; an icy wind snored over the bare gravel. There was no comfort in such a view, except the thought that somewhere out beyond the farthest mountain rim the spurs flared away to the plains of Hindustan, where flowers bloomed. Descending by a vile and ice-glazed path, we turned south again, keeping now along the foot of a lofty snow range, which divided us from the basin of the Trigu Tso, a large unexplored lake to the west. We were ourselves on unknown ground, but it was getting dark, and soon we could hardly see where we were going. We continued to march in glum silence, too tired to do more than tramp steadily on, and much too cold to ride our ponies. Daylight dwindled to dusk and dusk swiftly hardened to night. The wind still sobbed and moaned through the empty valleys and a pale moon occasionally shone through a rift in the flying clouds. But there was no sign of habitation. An hour passed. No sign yet. Two of the men lagged behind and I with them; we could hear the caravan crunching over the gravel ahead and sometimes see them against the sky as they topped a rise. Another hour passed. Suddenly a dog began to bay long and loud. 'At last!' I thought, much relieved. But nothing happened; we just went on and the baying of the dog, which came from a herd's tent, died away in the distance. By this time the caravan was swallowed up in the gloom, but we did not hasten; I felt sure that we should presently come up with them at a house.

We continued to ascend gradually, the plateau opening out in every direction, the mountains receding. We saw the red glow of a fire not far away, and again I thought we had reached our destination; but again it proved to be nothing but a herd's tent—there were yak snorting and grunting all round us now. At last

we saw a house silhouetted against the sky and the men went forward joyfully shouting. A voice answered them—alas! the caravan was not there, it had gone on! The cold was sending me off to sleep and it was all I could do to stumble along; but the men said it was quite near now and that we had not stopped at the first house, because it was quite full. So we went on again and gradually, in the darkness, went right off our course. The wind now mercifully began to draw breath, the clouds were already blown to shreds, and the stars glittered like gems. We found ourselves in the midst of a vast, featureless, undulating plain, surrounded by low hills which gradually receded as we tried to approach them. Round and round we wandered looking for a trail and shouting; but to no purpose. We separated, and searched in every direction; but could not find a trail on that iron ground. We were lost on the plateau at 15,000 feet, on a winter's night.

At last, after two hours, we heard a faint cry. Whooping with joy we went after it—lost it—followed it again in another direction, like a will-o'-the-wisp, and again heard it. Next minute a man holding a torch appeared over the skyline not a quarter of a mile away. We followed him to a small stone house, hidden by a fold in the ground, and there found the rest of our party. It was 10 o'clock, and we were very cold, tired, and hungry. I could not, however, help feeling sorry for the yak and ponies; though there must have been 50° of frost on the ground, they spent the night in the open yard.

As for us, we had a yak-dung fire which filled the small room with vitriolic smoke; but at least we kept warm. The place is called Tating, and consists of two stone houses, or two blocks of houses, about half a mile apart, and a few scattered tents; the altitude is over 15,000 feet.

It may be imagined that in such a place, in such a climate, cleanliness is not next to godliness. The people, muffled up in their sheepskins, are simply black, like niggers. Hands and face alone are visible; but they must be nearly the same all over, only their teeth are ivory white from constant chewing of *tsamba*.

February 4th was a typical winter day on the plateau—brilliantly fine, the most distant peaks being clearly visible in the crystal atmosphere, with a knife-edge wind blowing. Immediately to the west rose two high snowy peaks, rising far above the general level of the surrounding hills. Then away to the north-north-east, in the direction of Largharyi, was another group of snow-peaks, and between these two groups is a wide gap, where the Yartö Tra La crosses the range. Far to the south we could see a long range of snow-clad mountains, the Great Himalayan range itself. Our route lay almost due south over some low gravel hills, and after a few miles we reached the highest point, the Kale La, and plunged rather steeply down into an arid valley. This ridge we had just crossed separates the streams which flow to the Largharyi River and thence to the Tsangpo, from those which flow to the Subansiri, whose head-streams we reached next day; so we were over the second barrier.

Presently we came to ruins—stone walls and towers, more or less completely demolished, and still lower down to villages. At no very late hour we halted at a village called Dengshu; for a terrific wind was blowing which we found ourselves unable to face any longer. Indeed, I myself was feeling so unwell that I went straight to bed and quickly passed into a vivid stupor, throughout which my mind remained very active, though I was scarcely conscious; and so to sleep. Next day I was all right again.

Continuing down the glen, we soon entered a wide bare valley, with a stream flowing from west to east. This is called the Sikung Chu and is one of the head-water streams of the Subansiri. There was a good deal of cultivation here and we saw several villages, at one of which we halted to change transport. However, having travelled a few miles eastwards, we turned south again up a side valley, just as the wind began to blow with amazing violence. What with the force of the wind, which exploded in devastating gusts, and the flying grit, we could hardly face it and were glad to halt an hour later at Simbi.

We were warned to start early next day, as we had a long march before us, with a great range to cross; and after noon the wind would get up and rage with its usual violence till nightfall. It is this wind which makes life on the plateau for any considerable period at high altitudes so unbearable. It has a cumulative nervous effect; possibly its action is electrical, due to the constant friction of dry air. I do not know. I only know that it is slow torture; you are waging a losing fight all the time, up against something which gradually, but no less surely and ruthlessly beats you. It makes no terms; it is war *à l'outrance*.

In spite of the warning, we were too tired to start before 9. It was, as usual, a brilliantly clear morning. No stir in the air; the sun shone almost warmly; it looked as though it never could be anything but calm and peaceful—yet we had experienced the rage of the wind only a few hours before.

We now left the caravan to look after itself, which of course it was well able to do, and with our guide trotted up the valley as fast as our slow-motion screws would travel.

Continuing westwards for a short distance, we soon

reached the junction of two streams and turned southwards again up the smaller branch, between barren mountains of black slate, studded with garnets. The stream was choked with ice and about 10 o'clock we saw a curious sight; for the hot sun had by this time melted an ice-jamb higher up, and a regular spate of water loaded with brash ice came roaring down the channel, sweeping all before it.

Painful as travel on the plateau was at this season, from our point of view, it is just the time when the Tibetans, freed from work in the fields or amongst their flocks, choose to travel, and we met several yak caravans, transporting timber from the south. But the Tibetans are wise. They travel by night when there is a moon and on into the golden morning sunshine. Before midday everything is snug in camp. The sacks of salt or flour are built into a square, the flimsy tent pitched within, and the dung fire, smoking and giving out its intense heat, is burning well. As for the yak, they wander over the plain nibbling at the scanty herbage, indifferent to wind and snow. About noon we halted under a rock and made some hot soup to brace us for the coming struggle; the wind was rising now, and this was the last shelter we should get.

The climb to the Debshi La was neither long nor difficult; but no sooner were we on the wide saddle than the wind met us full face, almost hurling us backwards. Immediately to the west rose a high snow-clad range, and as we began to descend towards the frozen Nera Yu Tso, we came into our first serious contact with the snow since leaving the Nam La in November. Marching along the lake shore for a couple of miles, we left the basin by a dry valley at its southern end; apparently no water was flowing from the lake, though it no doubt overflows here in the summer, unless indeed

all the drainage is underground. But the lake, like others we had seen, is obviously shrinking, and may have shrunk below the level of its exit. The fact is, it was now snowing so heavily we could hardly see where we were going, let alone the finer points of the landscape.

After riding several miles down a narrow stony glen, we came at 5 o'clock to a solitary house, glorified by a name all to itself. This was Dengshu; and a more wretched place to spend an arctic night it would be difficult to imagine. The wind fairly whistled through our cramped quarters in the passage, and no curtain would keep it out; through holes in the roof we saw the sky; the fire gave out volumes of acrid smoke, but no heat; cockerels perched on sooty beams over our heads and crowed; mules scraped and champed and pawed under them. The caravan arrived three hours after we did, and late that night we got a meal. Before turning in I went out into the yard to see the animals. Poor brutes! The wind had died down, the clouds had disappeared, the stars blazed in a clear velvet sky, and the cold of infinite space lay over the frozen, silent earth. And they stood there with their saddles still on, patiently chewing straw!

We passed an unpleasant night; the morrow would see the hardest march of all, wind *and* snow; but it would also see us at Tsöna Dzong, the last mile-post on the Tibetan Plateau. We arose stiff, tired, and cold on the morning of February 7th, and it was nearly 10 o'clock before we started.

Immediately below Dengshu the valley widens out, and there was a stony lake-bed here, almost dry. The lake exit lay to the south-south-east, but we turned west again up a smaller valley, while the wind began to caress us with the edged touch of a razor-blade. Right

above us towered a group of snow-peaks, whose short steep snowfields were truncated in walls of blue ice. We marched up the valley over deep snow, parallel to this range; there was a frozen crust on the surface, but this would bear no weight and we were soon in difficulties, sinking to our knees at each step.

We reached the summit of the Torgor La in less than four hours, and the view which greeted us was certainly one to appal us, in our present state of weariness. A wide desolate plain, over which the wind raged unceasingly; barriers of harsh mountains in every direction; and over all, filling every valley, hiding every rock, a deep pall of snow. As far as the eye could see, there was nothing but this white wilderness, with clouds like cauliflowers foaming up over the mountain ranges. What this meant we were soon to learn, for the wind was driving the surface snow before it in clouds, and it was like powdered glass. It stung; it cut; it rasped. The cold was almost unbearable, and my eyes streamed with water, and I could not read the compass bearings; but Cawdor managed to do so.

For three hours we ploughed our way through the snow, gradually descending, till we climbed again to a low col, the Torgor La; and there far below in a bare little valley, lay Tsöna Dzong, snow-bound like everything else.

We descended as fast as we could; but it was a weary trudge across the frozen marshes, past the hot sulphur spring, and the *dzong*, and the first clump of houses, to the residential quarter by the monastery. Luckily the transport was not far behind, for we had had nothing to eat since breakfast, and it was now 6 o'clock. But we found a comfortable room, and there was a wood fire, and hot buttered tea prepared

by a friendly host. Above all was the pleasurable thought that in another two or three days we should be out of these terrifying winds, if not out of the snow, in the shelter of the forest.

CHAPTER XVIII

THROUGH BHUTAN TO INDIA

Tsöna may be a health resort in the summer, but it was now obviously more suitable as a centre for winter sports. The whole desolate valley slept under a deep carpet of snow, and in the village itself there seemed to be no life or movement. That, however, was deceptive. Caravans still come and go, for trade is brisk all through the long winter. For the moment the pass to Tawang was blocked and there was a lull until the yak could stamp a trail over it, that was all. An attempt had just been made in fact, but the snow was too deep, and it would be necessary to wait a few days.

We therefore had to abandon the idea of going to Tawang, and decided to cross the Pö La, which is 1,000 feet lower, immediately. The *Dzongpön's* manager called, bringing us a little frozen mutton and some suspicious-looking eggs, and suggested that we wait a few days till the next yak caravan came in; but we said that we could not wait more than a day (we grudged even that), and eventually hired mules and ponies from the monastery. The people with whom we put up were engaged in the rice trade. They called themselves Government contractors and imported rice from India, which they sent on to Lhasa.

Our object all sublime now was to reach India with the least possible delay, so it can easily be imagined how that idle day dragged. The morning was brilliantly fine, but in the afternoon the usual high-velocity gale,

blowing over the passes, brought up fresh snow. Still, we were better off than we had been for some time, because wood is not unknown in Tsöna, and we had a real fire. The altitude, the wind, and the cold of the last five weeks had left their mark on us. We were tired. We had lost 'that schoolgirl complexion'—and, indeed, each of us had been frost-bitten on the tip of the nose. Our eyes were sore and bloodshot from the ever-flying dust. We yearned for a change of diet. And in the evening came the authorities once more to say that they could not give us transport on the morrow!

However, after further appeal from Dick, the monks decided that the thing could be done, and we turned in, feeling that we had seen the last of Tibet for some time.

The 9th was a great day. We rose early and packed. The animals came into the yard two by two, and for a long time we thought we never should get away. In the end everything went according to plan, and we started up the sparkling valley, where crowds had collected to see us off. It was only about 5 miles to the pass, with an ascent of some 2,500 feet, but the snow got deeper and deeper, and the march proved troublesome, especially as we had started so late that the wind began before we reached the top. However, we reached the Pö La (14,900 feet) early in the afternoon, and what a sight greeted our tired eyes!

Behind us the dead plateau, wrapped in its dazzling white shroud, stretched out its frozen limbs to the pale porcelain mountains, all frothy with cloud. Except for the moaning wind and the swish of the driven snow blast, complete silence reigned. There was no tinkle of water, no song of birds, not even the flutter of a leaf; everything was dead, or fast asleep, or gone abroad for the winter.

In front of us, the mountain dropped away steeply to

the valley, the snow ceased abruptly, and the dark mysterious forests on the southern slopes of the Himalaya began !

A caravan was toiling up to the pass ; but we raced down anxious to see the forest again, and soon found several kinds of *Rhododendron*, including ' *Anthopogon*, ' *Lacteum* ' and a bronze-leafed ' *Arboreum*. ' The descent grew steeper and steeper, clearly a glacier had once forced its way through this glen ; and suddenly we found ourselves in the valley of the Nyamjang Chu, which flows from the north. Perched on a shoulder 1,000 feet above the river was a small village, and here we halted. We were over the third barrier, the Himalaya, in Mönnyul, the land of the Mönbas ; the last pass lay behind us !

All that night it snowed, and when we awoke next morning the world looked like a Christmas card ; but we had only to go down, down, down, steadily towards the fertile plains, and by evening we were out of the snow for ever.

For transport we had forty-five Mönbas, men, women, and girls ; or sometimes a few yak, which can live in the upper valley, though not lower down. The path is fairly good, but too steep to ride a pony in comfort, and there are endless flights of stone steps. We therefore walked the rest of the way to India.

First, we descended to the river, which is a beautifully clear stream, its steep banks thickly clothed with overhanging trees. Towering cliffs rise now on one side, now on the other, and the road dodges from bank to bank. Many of the bridges had, however, been carried away by the floods of 1924, though in some cases temporary ones have been substituted, and lower down the valley we met a whole gang of men and women rebuilding a damaged bridge. These bridges are stoutly

built of timber with stone piers and revetments. The footway rests directly on the piers, and is further strengthened by struts at each end, built on the cantilever principle, and embedded in the revetment.

The Mönba porters who carried for us were a cheerful, friendly and picturesque crowd. They were somewhat quaintly dressed in thick dark red woollen clothes, with long boots to match, and wore wigs, sometimes yellow, sometimes black or brown; but these were more in the nature of a protection for their hair while carrying, like the sack a coal-heaver puts over his head, than real wigs; they had perfectly good hair underneath. The women decorate themselves lavishly. Bead necklaces, silver charm boxes, and lumps of pale amber hang round their necks; and from a knob of turquoise stuck in the ear depends a string of scarlet beads. Their houses are of stone, high and narrow, with wooden penthouse roof.

As we descended, the forest changed rapidly from pure Conifer forest to mixed forest with many species of *Rhododendron*. Thickets of the bushy *R. Maddeni* covered the rocks by the river, and the slopes above were covered with 'Arboreum,' 'Triflorum,' 'Cinnabarinum' and 'Lepidotum' species. But on February 11th the change was even more noticeable, for on that day we began to see flowers again. Clematis, Daphne and Barberry were all in bloom, and presently we found the blood-red *R. arboreum*. But on the whole the vegetation was not very unlike what we had seen in the upper part of the Tsangpo gorge.

That afternoon we reached a more open part of the valley, where the stream, after flowing placidly through a wide flat meadow, plunged headlong over a rocky barrage into the glen below. Once upon a time a glacier had ploughed its way down the valley to this point; there was the terminal moraine it had left behind in its

retreat, as well as the wide basin it had scooped out. All round us were lofty cliffs, above which rose the snowbound mountains; and perched on the rocks, or plastered against the walls or jammed into crevices high up, were scores of stone houses. This was Pangchen. We, however, slept in a bamboo hut in the meadow, where ponies grazed; in the summer this meadow is a lake.

Below Pangchen the sharp water has been able to cut a deep and steep-sided bed for itself. For a short distance the forest is almost tropical, with many orchids hanging from the trees. Then suddenly, without rhyme or reason apparently, everything—climate, scenery, flora—changes. The river rushes into a gorge, great overlapping spurs jut out alternately right and left, the slopes grow dry and bare-looking, with rock and grass and bracken, but few trees, and, crossing over to the left bank, we had to climb steeply some 1,200 feet by a back-aching path, to the next village. A subtle change had come over the people also; they dressed differently, and had rather different features, though the high narrow stone houses clinging tightly to the shoulders of the spurs, were much the same. But a new type of house was at least equally conspicuous, namely the bamboo house, with its bent mat roof. We spent a night in just such a hut, and because it rained we got thoroughly wet, which gave us but a poor opinion of the local Nissen hut.

Sub-tropical crops flourished here, the slopes being neatly terraced for rice and maize; but just now the fields were green with spring wheat. Bananas, pumpkins, and best of all, orange trees also make their appearance, and we were able to get the most refreshing fruit. Everywhere on the steep, dry, rocky slopes, amongst thin woods of oak and pine, glowed red-hot

trees of *Rhododendron arboreum*, and for the next week's march, until we were within a few miles of the Indian frontier, this was the most vivid and virile colour in the valley.

After a day's march high up on the left bank of the river, where we saw many stone and bamboo villages, we plunged down hundreds of feet, and crossed back to the right bank. The bridge shared in the change which had come over the valley and its fittings. No longer was it of the rigid cantilever type, but a flimsy thing made of twisted creepers, like a hammock, floored with bamboo matting.

There was still no room to pass by the river, so we had to climb again to the level of a more ancient valley, where the slope eased off.

We now learnt that on the following day we should cross the Tibetan frontier into Bhutan, and as we carried no passport for that State, we wondered what our reception would be. What surprised us was that we could get no information as to how far it was to railhead, or even to a cart road, or to the Indian frontier. Yet this road is used a good deal, and we met many travellers returning to Tibet, some of them driving sheep, which carried small packs on their backs. These trotting flocks of transport sheep, complete with harness, carrying a bag on each side, looked very odd.

On February 14th we crossed the frontier and presently reached the first Bhutanese village, only to find it almost deserted. However, we persuaded our coolies to go on as far as the next one, where we arrived at 3 o'clock on a hot sunny afternoon, the first fine day we had had since crossing the Pö La. Opposite this point the Tawang River joins the Nyamjang Chu.

It now became necessary to declare ourselves to the Customs Authorities, so Dick went off to see the official,

bearing a scarf of greeting, and presents, and honeyed words. He returned saying that all was well. Two letters were written and stamped with the official seal; one to the *Dzong* of Trashigang, who is the most powerful man in the valley; the other 'to all whom it may concern,' to be carried by us, and used whenever we required to levy transport. In fact, every one helped us, including a Bhutanese soldier who, some years previously, had been one of Lord Ronaldshay's escort when he was travelling in Bhutan; and our safe conduct through the country was arranged for in the course of an afternoon's amicable chat.

We were now informed that in six days we should reach the plains, and a road by which bullock carts travelled to railhead. The fact that it actually took us nine days was due, not so much to misinformation, as to unforeseen delays.

On the following day, which was fine and hot, we were due to reach Trashigang Dzong. We started down the hill, crossed a stream by a good wooden bridge, and found ourselves by the Nyamjang Chu again, now quite a big river. Shortly after, we reached cultivated fields, and halted for lunch, but the village was away up the mountain out of sight.

A fresh relay of porters was due to meet us here, but there was no sign of them. However, thinking that the transport would presently follow, as it usually did, I strolled on ahead to botanize.

An hour passed, and another. I found several interesting orchids on the trees by the river, and went on very slowly. Still no sign of the transport, and I began to realize that something had gone wrong. Still, it hardly seemed worth while going back now; they would be sure to come presently and, anyhow, Cawdor was in charge of them, with Dick and Sunny Jim to

assist ; so on I went. Some distance ahead, perched aloft on a high spur across the river, very white against the iron grey sky, stood a fort. 'Trashigang,' I thought to myself, and set out to reach it. Trashigang was the last place shown on our large-scale map on the road to India, and therefore a very vital landmark to us.

Dusk fell swiftly and was succeeded by a peculiarly dark night. Suddenly there loomed up quite close to me the towers of a great bridge spanning the gorge, and I found the road barred by a wooden barricade. Hammering on the door, I was admitted by a surprised-looking youth, and climbing some stairs in the guard tower of the bridge, entered a small room. Several coolies were just settling down for the night, and I was obviously not popular. However, they had to put up with me, and having tried to extract information from me in several unfamiliar tongues, they relapsed into watchful waiting. As for me, I proceeded to make myself as comfortable as my foodless and bedless situation would permit ; the caravan, I decided, would not arrive till morning, and the best thing to do in the meantime was to go to sleep.

However, I had underrated Cawdor's resolution. I had barely fallen into a doze on the hard wooden floor when I heard a faint shout, followed by a series of whistles ; some one was banging on the guard door. Seizing a brand from the fire, I went down the ladder and opened the gate. A crowd of men stood outside, and by the fitful glare of torches, in filed a dozen coolies, and Sunny Jim, under the leadership of Cawdor. The latter was so relieved to see me that, despite the provocation he had received, he kept his thoughts about my desertion to himself, and merely said that, not knowing what had become of me, he thought it prudent to push on to the bridge with what coolies he could impress ;

where he arrived at 11 o'clock at night. Cawdor was like that. While we were settling into the tower he told me the story.

The first lot of coolies had refused to budge from the place where we had halted for lunch ; on the other hand, they had not just dumped their loads and fled, which, as it turned out, was considerate of them. Meanwhile, Dick had gone up to the village and flushed a few coolies whom he had driven down ; and between them they managed to persuade about a dozen of the other lot to go on. Having wasted five hours at this spot—it was now 6 o'clock,—they finally got under way, though several boxes had to be left behind. By this time it was already nearly dark, and after marching for two hours, half the coolies dumped their loads, pointedly lit a fire, and refused to budge till morning.

Dick was therefore told off to stand by, while Cawdor and Sunny Jim, by means of threats, cajolery and other arts, persuaded the remainder to go on as far as the bridge. Strangely enough, it was the old gang, who had been carrying for us all the morning, and on whom we had no real claim, who came on ; nor did we forget that when we paid them.

The coolies in the tower who, seeing me on foot and without attendants, had probably taken me for an escaped lunatic, and not worthy of attention, now bustled about, sweeping another room, lighting a fire and carrying boxes ; while Sunny Jim damned them in heaps for not looking after me.

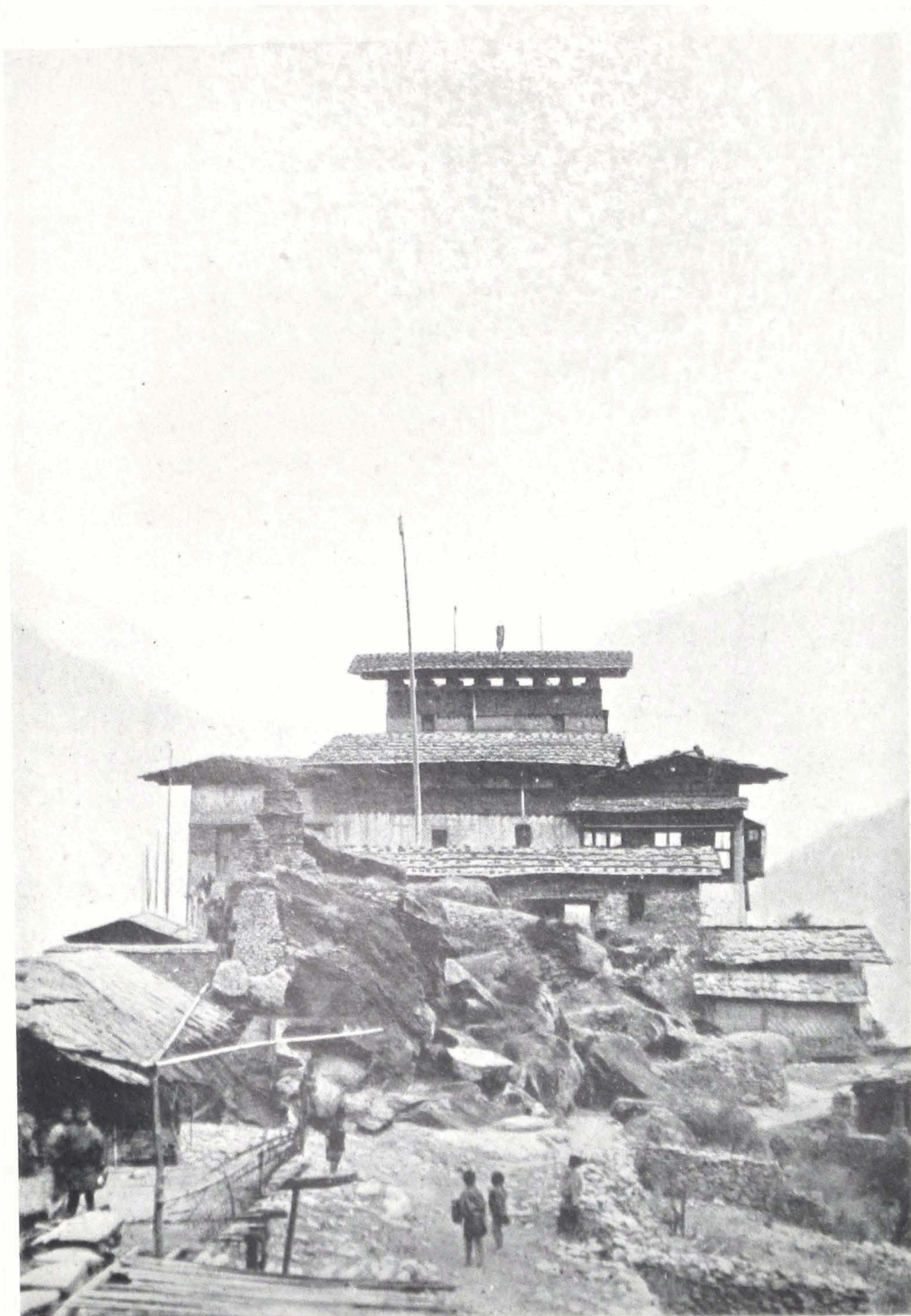
After a cup of cocoa we got to bed about midnight and were abroad late next morning ; indeed, while we were at breakfast (which was skimpy, because the rations had not come on), Dick rolled up with the balance of the coolies. So we had another breakfast. Meanwhile, standing under the tower across the bridge we saw two

fine mules, handsomely caparisoned, in charge of an Indian *sais*.

After crossing the bridge we found that the mules had been sent down by the *Dzongpön* for us, and as the *dzong* was about 1,000 feet up the cliff, we were very glad to ride. Arrived in the great courtyard, where crowds had collected to see us, we were welcomed by the old white-bearded *Dzongpön*, who asked us to stay the day. Anxious though we were to push on, it would have been churlish to refuse such an invitation, and we were shown to charming quarters. Meanwhile, all our heavy baggage was sent on ahead, so that we could start early next morning.

Trashigang Dzong, which is half fort and half monastery, straddles the extreme end of a narrow spur, whence you can look straight down 1,000 feet on to the toy bridge below. The bridge itself is the most wonderful thing we saw in Bhutan. It is of the hammock type, supported by four chains, whose links are 18 inches long; these are fastened to baulks of timber which are built into the towers. The footway is of bamboo matting, so that ponies can cross, and on each side there is a hand-rail made of four cane cables. The masonry towers are about 40 feet high, and as the bridge is 60 yards long and stands quite 50 feet above the river, it can easily be imagined what an imposing object it is.

We found several curious characters at Trashigang, including two Indian coolies. One of them claimed to have been a sepoy, but was not very convincing, and both of them had probably fled the country under urgent necessity. There was also a Bhutanese youth who had been to school at Darjeeling and spoke English quite well. He was, in fact, just starting back there to take some examination and was told off to accompany us as interpreter, an arrangement which pleased us well.



TRASHIGANG DZONG, BHUTAN

The Bhutanese struck us as rather different from the Mönbas. They are a short, sturdy, round-faced people, with merry expression and bobbed hair. The women wear a long striped skirt, so tightly bound round their waists as to hobble them, and an equally tight long-sleeved blue jacket. Less pleasant is their habit of chewing betel-nut.

For some days now we had been able to march in 'shorts,' but at Trashigang we found the blood-blister flies very active, and our bare knees suffered badly. We were told that we should reach the plains in five days, for which I was thankful, as the mica schists of Mönyul had cut what remained of my boots to ribbons, and I was almost marching in bare feet; but it took us seven days.

On February 17th we started off again, the *Dzongpön*, to whom we had presented our excellent camp-table, lending us mules to ride. The road was surprisingly good, and we met a good deal of traffic making for Tawang.

For the next four days our road lay south-east, diverging gradually from the valley of the Nyamjang Chu, and crossing a series of high spurs separated by deep glens, which discharged streams into the main river. We saw no villages, partly because the weather was dull, with low visibility, and partly because there were none, at least near our route. We slept in our tents or in bamboo shelters which we found at the end of each stage; and though we made slow progress on account of the shortness of the marches, we were getting very close to India.

And then on the 20th came a check. We had done the usual march from the bottom of one valley to the top of the next ridge, covered with the usual scented pine forest, and ablaze with the usual scarlet Rhodo-

dendrons. We found here too, in fruit, on the dry gravel slope, a lily, bearing one large solitary capsule, suggesting a very large trumpet flower. The plant itself stands 2 to 3 feet high, having a leafy stem, and a rather small, fleshy cream-coloured bulb, growing some 6 inches below the surface. What this lily is I do not know, and one looks forward with pleasurable anticipation to seeing it flower (K.W. 6428).

Early in the afternoon we reached a cluster of small grass huts, evidently built for some distinguished travellers. We thought modestly they might be for us; at any rate, the coolies now set down their loads, saying they had reached the end of the stage. In the offing we noticed an irate headman, directing the operations of a gang of serfs who were cutting jungle. Here, we thought, was our man. Instead of having to wait idly till the morrow, we could change transport immediately and march on till nightfall. No one who has never wandered far out of his orbit can conceive the tremendous pull exerted by home as he approaches nearer and nearer the centre of his system. We were now deeply under the influence of this major body, being but two marches from India, and fatigue vanished; we could have marched—nay, felt compelled to march—all day and all night, drawn irresistibly towards the sun of our civilization.

But we were now violently deflected by this foreign body. He was a tartar. No sooner did we mention the word 'coolies' to him than he exploded. Coolies? Who the hell were we to demand coolies! Where had we come from? Tibet? Well, then, we could go back there! We had no passport?—could impudence go further! Oh! a passport from the Trashigang *Dzong-pōn* indeed! And who the blazes might he be! He cut no ice here anyway!

‘Nay, good sir, be not in such haste; we would speak you fair!’

‘I won’t listen! His Highness, the son of the Maharaja of Bhutan, is in camp below, 20 miles down the valley; write a letter to him and I will send it. If he, of his clemency, allows you, unworthy foreigners that you are, to pass, well and good. But until he sends back a letter granting you permission, here you stay.’

A truculent knave indeed! Diplomacy would be necessary to deal with him. Meanwhile, we tried to bribe our own coolies to go on. But no, they had done their job, and had to get back to their village, or their own headman would be unpleasant. Then we picked out half a dozen likely-looking waverers, raised the bribe, and asked them to come on with us; and they were about to accept, and risk the consequences, when the angry headman, uttering awful threats, reminded them of what might—nay, would happen if they persisted in their folly.

So they too refused, and there we were. Never in the darkest hours in Tibet had India seemed so far off and unattainable. There was nothing for it but to send the letter. We knew quite well what the answer would be, and it was that which infuriated us. His Highness would, of course, welcome us with open arms—we could never make this dull oaf understand who we were—and two good days would have been wasted for nothing. Even the certain and painful extinction of the headman could never give us back those two days.

So we sat down to write the letter, while Dick made tea. But how did one start a letter to the son-in-law of a Maharaja? Cawdor, appealed to, suggested ‘Dear Bud.’ I favoured the more colloquial ‘Say! Bo.’ In the end I compromised and wrote, ‘Dear Sir.’ We had

been informed that His Highness understood English perfectly, and had adopted Western ideas of civilization; which was a great help. I went on to state our unfortunate position, asked for assistance, and gently but obviously insinuated the cause of all our troubles, finishing up with the usual friendly greeting, 'sent with a scarf.' We happened to possess one quite good silk scarf, and when Dick had picked the burrs out of it, and the letter was sealed, and such presents as we could muster, chosen, everything was ready.

At that moment I felt a slight undulation of the grey matter. 'Why not go ourselves?' I suggested to Cawdor, 'and be our own messengers! Let us put two days' chocolate ration in our pockets, sling a blanket on our backs, and trot along to India. It will be warm enough down in the valley, and anyway it only means a night or two of discomfort.'

Needless to say, Cawdor required no persuasion, and we made instant preparations for departure; that is to say, we had a hasty meal, stowed some bars of chocolate in our pockets, got out a blanket apiece, and gave instructions to the men. Sunny Jim was to stand by the kit and bring it on when he saw an opening; Dick was to accompany us. All was now ready. We would immediately shake the dust of this perverted village from our feet and ensnare the wicked headman. There was at any rate one indignity he could not offer us; he could not bind us, and therefore he could not prevent us departing. But no sooner did the headman learn our intention than he changed his tune entirely. It was too ludicrous. Our swift decision completely unnerved him. He was prepared for inaction, but action put him right out of his stride.

We must not go, said he. The way was difficult—there were tigers, we should be eaten in the night, we

should fall over the cliff in the dark, we should be frozen, we should starve. What of it? We went on with our preparations, ostentatiously taking out the gun to deal with flocks of tigers. It was only too obvious that we were winning now. 'Stop,' said he, almost beside himself with panic; 'do not go, friends. If you will stay the night I will supply porters in the morning.'

That was all we wanted; we made him swear that the full number of porters should be available early the following day; we had fires put in two of the grass huts; and from that moment the headman, humbled and polite, did precisely what we told him to do.

Nevertheless, we did not start early next morning, though our nervous friend was very apologetic for the scarcity of porters. Eventually we started with half the men carrying double loads.

The road—a good one—led downhill, but it was not easy. Late in the evening we came to an abrupt descent, and dropped down to the wide stony valley, lined with tropical forest. In spite of every effort, however, we did not reach His Highness's camp that night, but halted at another prepared camp. Even so, only half the porters made the stage, the rest arriving early the following morning.

We had only just started down the valley on the morning of February 22nd, when we were met by servants leading two fine mules sent by His Highness for our benefit. We mounted these and soon covered the few remaining miles to the camp, which consisted of a few bamboo *pandals*. The Raja himself and his comic manager stood hand-in-hand like the babes in the wood, eyeing us shyly. Behind them were gathered clerks, grooms and servants in embarrassing numbers. All were dressed so much alike that had it not been for the grey Homburg hat worn by the Raja, we should

never have recognized him for what he was, and that he removed as we rode up. He wore a long grey Chinese *makua* or close-fitting gown, top-boots, and large ear-rings like a pirate, and he chewed betel perpetually. In fact, he was a typical Bhutanese. He at once invited us into his *pandal*, which was so filled with inanimate objects that we could scarcely move; and when we had seated ourselves on cushions, he brought out from a hidden store a bottle of brandy and a tin of cream crackers. The *pandal* was hot and stuffy; just outside thousands of decomposed fish were drying in the tropical sunshine, and close alongside were the horse lines, so that it was not surprising the atmosphere was turgid with odour and humming with flies. The Raja, far from understanding English, could not even understand Hindustani, and the conversation was carried on in Tibetan through Dick!

After a short rest we rose to go. His Highness lent us mules to ride to the end of the stage. We ourselves might have reached the plains by evening, but the porters could not have done it, so we were told to go as far as a place called Godam, a few miles farther on, where there was a village and a *pandal*. One particularly useful thing the Raja did. He ordered the coolies to go on with us to the plains. As these were the conscripts of the truculent headman, we felt that we had taught him a sufficiently severe lesson in the advantage of courtesy, without reporting him to the Raja, who would certainly have scalped him. We also gave the Raja, in recognition of his kindness, our electric table-lamp and a small tent, which greatly pleased him.

We now set out again down the valley, and presently climbing a low spur, reached an open grassy ridge, where stood the village of Godam, or Devanguri, where we halted, though it was quite early in the afternoon.

From here the forested hills went rippling and rolling down to the plains of India, a few miles distant ; but so thick was the haze that we could see nothing save here and there the gleam of a meandering river. But when night came, a great crimson glare shot up from below, where the stubble was being burnt in the cultivated fields ; and the mists gathered together and lay soft and white and silvery in the moonlight along the foot of the mighty Himalaya.

And with morning we rose early and raced down the rough track to the frontier and emerged suddenly from the scorched crackling hill jungle on to the plains of India. There was a market here, and hundreds of hill-men and women were coming and going. We went straight to the little white bungalow, near the Military Police lines, for our journey was over. We were now only 26 miles from the Eastern Bengal Railway at Rangiya, and to our delight we found that a car plied between this place and railhead, and was at that moment in the village waiting to return. Within two hours, the coolies having arrived with the kit, we had piled our bedding on the car and taken our seats. Dick accompanied us. Sunny Jim was left behind to bring the heavy baggage along in bullock carts, by night, and at 4 o'clock in the afternoon we bumped out on to the hot dusty plain.

There was only a dirt track, and in places that had been completely washed away and strewn with grave for miles, where some stream had come down in spate ; so progress was slow, and even uncertain. When we had covered some 22 miles, a tyre burst, but seeing the lights of Rangiya railway station ahead, we pressed the driver to go on, and finally crawled into the village just after dark.

Rangiya proved to be a typical up-country wayside

station, and anyone who knows India will know what that means. Yet to us it seemed like paradise. We surged into the refreshment-room and from the white-robed attendant ordered tea, to be followed by dinner. We made up our beds on the stone floor of the waiting-room. We walked the length of the platform several times, looking at the red signal lights and listening to the subdued hum of life down in the small native bazaar.

How we enjoyed that meal, seated at a table with a clean white cloth! And how the ordinary Englishman, travelling in India, would have turned up his nose at the curried chicken! But to us it was manna. We retired early, but did not sleep well, because we were not yet used to the heat, though Assam is not really very hot in February!

At 10 o'clock next morning the Calcutta mail came in, bound for Dibrugar. Shortly after that the bullock carts arrived with our kit, and in the middle of the afternoon the Assam mail, bound for Calcutta, arrived and we climbed aboard, sharing a carriage with two other men who were homeward bound. That night we formed a cheerful party, our new-found friends overlooking our disreputable appearance in view of our late adventures. It was nearly a year since we had set eyes on another white man!

On February 25th the train steamed into Calcutta, and we were back at the place where we had started.

CHAPTER XIX

THE PEOPLE OF SOUTH-EAST TIBET ¹

In these short notes on the inhabitants of South-eastern Tibet it is proposed to deal mainly with the Tibetans of the Tsangpo Valley, the Mönba tribes of the jungles of the eastern extremity of the Himalaya, and the inhabitants of the province of Pemak. Much has already been written concerning the Tibetans of the plateau. The present writer feels, therefore, that it is more within his power to discuss the character and habits of the inhabitants of the more sequestered parts of the country.

The Tibetans themselves divide the inhabitants of the Tsangpo and Po-Tsangpo Valleys into the following main divisions: Tibetans, Mönbas, and Lopas. The Mönbas appear originally to have emigrated from Bhutan, and to have settled in the dense jungle region south of the main axis of the Himalaya in the province of Pemakö. They are also to be found in the valley of the Po-Tsangpo, and south of Tsöna Dzong on the marches of Tibet and Bhutan. The Lopas appear to be Abors: the aboriginal inhabitants of this part of the Himalaya. The term 'Lopa' seems to be loosely applied by the Tibetans, and really means any kind of jungle people. It is equivalent to our word 'jungly.' The Tibetans, no doubt, would classify Abors, Mishmis, and Daphlas impartially under the name of 'Lopa.'

¹ This Chapter and the next are contributed by the Earl Cawdor, who accompanied Captain Kingdon Ward throughout the journey.

There are no noticeable racial changes in the Tibetans as one goes east along the Tsangpo Valley. Rather, as one leaves the barren plateau country farther behind, and penetrates deeper into the warmer, wetter, and more fertile parts approaching the Tsangpo gorge, one realizes an almost imperceptible change in the people: they begin to have more the appearance of a jungle race. Fewer clothes are worn by the natives, proclaiming a more genial climate, and sloping wooden roofs on the houses suggest a heavier rainfall. Nearly all the Tibetans of the plateau wear their hair in a pigtail which is usually twisted round their heads; farther east there appears to be no fixed rule for hairdressing. One sees some men with hair reaching to their shoulders, some with 'bobbed' hair, some with their hair cut short, and some with pigtails. Most of the men carry swords, but these are, for the most part, short and well suited for use in the jungle. One sometimes sees men with very long swords, but these are most common amongst the Pobas. Swords are always carried horizontally at the waist; and the length of a sword is supposed to be regulated by the length of the man's arm, so that it may be drawn out of the scabbard without difficulty.

Throughout Kongbo a characteristic garment is worn by both sexes; this is what might be described as a 'double apron' of leather. It is generally made of the skins of cows or goats roughly tanned, though the skins of gooral, takin, and bear are also used. It is an oblong piece of leather some 6 feet long and 2 feet wide, with a hole in the middle. The wearer puts his (or her) head through the hole, and allows the two aprons to hang down back and front. The ends of the aprons are pulled up till they reach about the level of the knees, and the whole, when secured by a leather thong round the waist, forms an excellent weatherproof garment. In

wet weather the hairy side is worn outermost. This seems to be a Tibetan garment, though it is worn by some Mönba tribes.

In the provinces of Takpo, Kongbo, and Ü it is the fashion for the women to paint their faces black. One sometimes wonders why a people who seem—in European eyes—naturally hideous should wish to make themselves positively grotesque. There is a legend to the effect that one of the Dalai Lamas found difficulties in keeping his vows of perpetual celibacy unless the ladies took this precaution; but whether there is any truth in it one cannot say. Certainly a woman does not look her best with her face polished like a black-leaded stove. None of the Mönbas or Lopa tribes seem to have recourse to these aids to beauty; one often sees very fair-complexioned women amongst them.

All along the Himalaya, salt is responsible for periodical migration of jungle folk across the range. In Kongbo it is the Mönbas and Abors who carry on this traffic; farther west the Daphlas are responsible. Salt is brought into Kongbo from the north-east by Horbas and other nomadic tribes inhabiting the north-eastern boundaries of Kam. They exchange salt for *tsamba* at Gyamda, whence the salt is distributed throughout the province. The Mönbas and Abors in turn bring rice in exchange for salt. The chief centre of exchange with the jungle people is Pe, a village on the Tsangpo at the northern end of the Himalayan pass known as the Doshong La. This pass is open from about the middle of August till the middle of November, and during the months of September and October there is a never-ending procession of Mönbas up and down the road. Besides rice, they bring chilis, ginger and other spices, bamboo baskets, rattan cane (used by the Tibetans for whip-handles), embroidered cloth, and other merchan-

dise. A Tibetan agent at Pe values the loads, and hands over salt in exchange, in the course of which transaction the unfortunate junglies are, no doubt, done in the eye.

During these busy months Pe has the appearance of a centre of vast mercantile appearance, but throughout the rest of the year resumes the even tenor of rural inactivity. In the height of the 'season,' however, much entertainment may be had by observing the Tibetan laughing at the barbarous jungly, who, after all, is not so very far behind him.

The bulk of the trade is done by Mönbas from villages round about Yortong, but a good many Abors and Kampas trade too. We met only one party of Abors in Pe; they had come twenty-five days' march, and stopped only one night. Evidently they had no relish for stopping in the enemy's camp longer than was absolutely necessary. The Tibetans regarded them as a huge joke; the fact that they spoke a strange language—not unlike the growling of dogs, on first acquaintance—was considered extremely humorous. In fact, the Abor contingent were as good as a circus for Pe. We found it none too easy to get information out of the Abors, for they knew nothing except their own language; even when we found a Mönba linguist who knew the Abor language as well as Tibetan, they did not prove very forthcoming.

All the Abors we met wore a garment not unlike the Tibetan *chupa*, but very short, and reaching only a short way below the waist. A strip of cloth hanging from a thong fastened round the waist completed their costume. They were bareheaded and barefooted, though some of them wore fringed puttees round their legs while they were in the village. They all carried a short heavy knife, not unlike a meat-cleaver, with a blade about a foot long by 3 inches deep, and with a blunt

end. This was carried not in the Tibetan fashion but in a basket slung about their necks. Some had bamboo bows about 5 feet long fitted with bamboo strings, and iron-tipped arrows poisoned with aconite, and notched through about 3 inches from the point. These Abor bows and arrows are exactly the same as those used by the Mönbas : one end of the bow is shod with iron and serves as a combined alpenstock and ice-axe, as well as a weapon of offence. Most of the Abor men wear earrings consisting of a silver disc more than an inch in diameter. The ornament is decorated with a sun disc with radiating beams. The hole in the lobe of the ear is gradually enlarged by means of a strip of bamboo coiled like a watch-spring. A small knife in a skin sheath is attached to the girdle ; the blade is curved and sharpened on the outside of the bend. The Mönbas use a knife of the same type, and I understood that it was made in this fashion for cutting thin strips of bamboo for making ropes and baskets. For, like all jungle folk, the Mönbas and Abors depend on bamboo for many of the necessities of life.

The loads of rice and salt are carried in strong bamboo baskets about 3 feet deep. Bamboo leaves are usually woven into the sides of the baskets to make them water-proof, and they are provided with covers of bamboo matting to go over the top. The usual load is from 80 to 100 lb. These are heavy loads when one considers the roads over which they are carried. Cliffs, snowfields, bogs, ladders, log-bridges, and fords are some of the obstacles that have to be negotiated on the Doshong La. All along the road there are camping places : hollow trees and overhanging rocks are the most sought-after refuges, and judging by the usual condition of these popular hostels the guests are not too particular in their habits.

The Doshong La is not a high pass as Himalayan passes go : the summit is about 13,500 feet. But one is forced to admire the hardiness of these half-naked junglies, who, having overcome the difficulties incident to the earlier part of the journey from their villages, tackle the steep snow slopes with their ponderous burdens and descend into a strange country. It is to be wondered at that there is not a heavy death-rate amongst these salt-traders, for the weather on the pass is uncommonly vile, and they are but ill-equipped for the encounter. We did hear dreadful stories on another pass of a party of Mönbas who walked to their doom up the wrong glacier in a blizzard ; but accidents seem to be infrequent on the Doshong La, where, every year, these hardy, cheerful little folk cross in their thousands.

The Kampas (natives of the province of Kam), a certain number of whom join in the salt traffic of the Doshong La, seem to be fairly recent settlers in Pemakö. We were told that owing to the heavy expenses in connection with the formation of an army at Lhasa, rates and taxes in Kam had increased enormously. A number of Kampas have therefore emigrated to Pemakö, which appears to be a happy hunting-ground for those who are anxious to escape the avaricious grasp of the Chancellor of the Exchequer. It is a good example of the measures that men will adopt in order to avoid taxation—always supposing the story is true. It is hardly probable that there can be several villages in Pemakö inhabited by escaped criminals from Kam. Yet most of the Kampas we met in course of our travels seemed to be 'wanted by the police.' At all events, whatever the reason for their emigration, the Kampa settlers seem to be getting on well enough in Pemakö. One would not expect them to take kindly to the change of air ; for it must be a very different climate from that

of their own country, and, as a rule, Tibetans regard jungle country as an abomination.

In Pemakö and in Pome we found very considerable differences in the conditions of life of neighbouring Mönba communities. At Payül on the Tsangpo we found a most miserable tribe of Mönbas. Practically all of them suffered from goitre—a very common disease in these parts—and there was a high percentage of cretins amongst the inhabitants. The altitude of the villages hereabouts is from 5,000 to 6,000 feet. Most of the men possessed but one garment apiece, hardly any of them had boots, and their only weapons were swords and bows and arrows. They lived entirely on millet, which is boiled until it forms a thick paste. They usually mixed bear's fat with it to make it more palatable. They were reputed to hunt takin with dogs and bows and arrows. They certainly were successful in snaring game, for on a spur above the river we found a dead takin in a snare made of bamboo rope. They also set snares for musk deer.

At Senchen, a Mönba village close to the confluence of the Po-Tsangpo and the Tsangpo, we met with a much more highly-developed type of Mönba. The men were all well developed and very muscular; some of them stood over 6 feet in height. They were well clothed and provided with takin and gooral skins, and almost all wore Tibetan boots. The men seemed to be either hunters or woodmen, the former all being provided with matchlocks with which they did great execution amongst takin and gooral. We found this tribe extremely friendly and most intelligent; goitre was not so common, nor were there so many cretins.

In Pemakö and the southern part of Pome different crops are harvested almost all the year round: maize, millet, wheat, barley, rice, and potatoes are the main

crops. Besides these they grow chilis and white turnips. The chilis, when gathered, are dried in the sun upon the roofs of the houses. It is quite a feature of the landscape in this country to see brilliant scarlet patches on the roofs of houses where the chilis are put out to dry. This is quite an important crop to the Mönbas, since they pay tribute to the King of Pome in the form of chilis, huge baskets of which are sent up to Showa each year. Red chilis are very popular in Tibet, for the Tibetan uses them to flavour his otherwise rather uninteresting fare of barley-meal. No doubt the King of Pome makes quite a good thing out of his 'line' in chilis.

The Mönbas are nominally Tibetan Buddhists, but the restrictions as to killing game prescribed by that religion does not appear to cause them the smallest uneasiness, for they indulge in the chase with the utmost spirit and cheerfulness. There are Buddhist temples in most of the villages, and close beside them one often sees a tree surrounded with wooden spears where birds have been sacrificed to propitiate the spirits of the forest. It is a common thing to see a hollow tree-trunk placed upright in the middle of a field in which the spirit guarding the crop is supposed to dwell. A flat stone is generally placed on the top of the log, but whether it is to keep the rain out or the spirit in I cannot say. There are plentiful signs of Phallic worship in this part of the country; one frequently sees a wooden phallus driven into the ground outside a village. (In parts of Bhutan almost every house has one of these ornaments suspended from the ridge of the roof.) We used even to see a phallus carved on a tree-stump in the forest beside a hunters' shelter; but perhaps this is a case of Satan finding work for idle hands to do, rather than any definite form of worship.

Farther north, up the Po-Tsangpo Valley, we encoun-

tered Lopa villages. The inhabitants, although they called themselves Lopas, did not resemble Abors in the slightest degree. They were rather more like Mönbas, but in some ways different from any other people we met. The men were short and sturdy, with curly hair cut fairly short. They wore the ordinary Tibetan clothes, and seemed to be well supplied with gear. They were particularly cheerful and friendly, but inclined to be idle as porters. Once we had left the Mönba villages of the lower part of the Po-Tsangpo, we passed through villages inhabited by so-called Lopas until we got into Kongbo. We met very few Pobas. These seem to be a sturdy and warlike tribe, judging by the way they dealt with the Chinese soldiers some years ago. Our porters pointed out one narrow defile on the road by the river where about a hundred of the Chinese transport were enfiladed and cut up by Poba warriors.

Near Tongjuk, at the entrance to a village, were a couple of wooden figures of men about 9 feet high—grotesque faces were carved on them, and the heads and bodies had at one time been painted. Inquiries from local inhabitants failed to elicit more than that they were 'wooden men'—we might have guessed as much ourselves. They professed a total ignorance of when the figures were put up or why. We saw a single wooden figure outside another village near by, and one at a village on the Nyang Chu between Gyamda and Tsela Dzong; but in no case were we able to discover anything concerning their history. We never saw anything like them in any other part of Tibet, nor had we ever heard of such things. It is possible that they were erected by the Chinese; for we know that they came through Tongjuk. But in that case one would have expected the local people to have remembered something about them. In actual fact the local wits

knew, or pretended to know, no more about their origin than if they had fallen from heaven.

No account of this country, however short and however vague, could be considered complete without reference to the bridges built by its inhabitants. The Tibetan seems a bridge-builder by nature. He has, of course, to adapt his plans to the material obtainable, but the results are very commendable.

On the plateau the usual method of crossing a stream is to walk through it in the summer and in the winter to slide across on the ice. A convoy of heavily-laden mules skidding about on a frozen stream provides a most exhilarating form of winter sport. On the Tsangpo, opposite Tsetang, is the remains of what was once an iron chain bridge supported by masonry piers. To-day too little of it remains for one to see exactly how it was arranged. The piers seem to have been built on a mass of loose rubble which was used to make an artificial island in the middle of the river. This alone must have been no mean undertaking. It is possible, however, that this bridge was engineered by the Chinese. Since this bridge was destroyed, the passage of the river is made in a wooden barge, not unlike a four-poster bed, and not much more seaworthy. When we went across in the winter it was in better condition than usual, the leaks in the bottom having frozen solid. A little farther down crossing is effected by skin boats; these are about 8 feet long, with a beam of 4 feet. The frame is of withies, and is covered with yak skins. On other parts of the river dug-out canoes are employed. These are made from logs 35 to 40 feet long and 30 inches in diameter; they are hollowed out to a depth of 2 feet. In order to make the craft sufficiently stable for the transport of ponies, two canoes are often lashed together side by side.

On rivers where timber is plentiful, and the span is not too great, cantilever bridges are built. This appears to be the type of bridge in which the Tibetans and Bhutanese are particularly expert. Masonry foundations are built in which the ends of the beams are anchored. The beams are keyed together and each projects a little farther than the one below ; there may be from six to eight beams. The central section is usually a flimsy platform fitted with side rails. In the event of one end of the bridge being attacked, it is an easy job to lift out the central section, and drop it into the river. These bridges are often provided with gate-houses. The finest specimen of a cantilever bridge that we saw was over a tributary of the Manas in Bhutan.

A type of bridge common in Tibet where long spans are encountered is the rope bridge, or monkey bridge. The ropes are made from long strips of bamboo twisted up, and are usually from 4 to 5 inches in diameter. The rope bridge at Gyala consists of two of these ropes with a span of 300 feet. The intending passenger ties a rope to one arm of a bullock yoke, hitches the yoke over the ropes of the bridge, passes the other end of the small rope round his waist, and secures it to the other arm of the yoke. He then launches himself into space, and, having slid to the bottom of the sag—the yoke taking his weight and acting as a slider—he has to haul himself up the other side with hands and feet. The process is both slow and laborious, but not nearly so painful as the alternative, which is to be hauled across by means of a line attached to the yoke. To get loads across, a party on either side of the river have a long line made fast to the yoke on which the loads are slung, and haul it back and fore.

A rather more advanced type of suspension bridge is

the hammock bridge. Here cables either of bamboo or rattan are used. Two or more cables make the floor of the bridge, and other cables, slung rather higher, make the sides. The cables are secured to trees, stakes, or rocks on the bank. Bamboo or rattan ropes are looped round the cables forming a network on which bamboo matting is laid as a roadway. This kind of bridge is common in Bhutan; one, at Trashigang Dzong, had a span of 65 yards and was about 50 feet above the water. In this case the weight was taken by iron cables, and the bridge was so rigid that mules could cross it.

CHAPTER XX

HOUSE AND HOME IN SOUTH-EAST TIBET

Among the Tibetan women of the plateau of Southern Tibet the chief variation in ornament is in regard to their head-dress. Round about Gyantse the hair is stretched out on huge frames of wood and wire, which project some 8 inches on either side. These frames, also, are generally decorated with red and blue beads, and the wooden and wire parts are covered with red cloth. The women of Lhasa and the province of Ü wear a smaller cloth-covered wooden frame and attach long tails of false hair at either side of it. These tails, I fancy, are only used on high-days and holidays. All these ladies when travelling wear a red cloth covering over their head-dresses.

In this part of Tibet the women generally wear aprons of striped cloth. These are made in narrow strips sewn together. It seems to be a Lhasa fashion, but has spread all over Southern Tibet. In Lhasa, as in Paris, fashions are set, the chief difference being that they are a good deal cheaper and much less diaphanous.

As regards the clothes worn by men in this part of Tibet, there are no very marked variations. The *chupa* is worn in all parts of the country, and resembles a dressing-gown girded up round the hips, leaving a large bag in front in which provisions for the immediate future are commonly stored. It is an accommodating form of dress; if it is cold, another *chupa* is added; if warm, one or more is discarded. It is a common

sight to see muleteers, having arrived at the lower altitudes of a sheltered valley, marching with their *chupas* hanging down and tied by the sleeves about their waists. In winter the dwellers on the plateau usually wear *chupas* made of sheepskins, with the wool inside.

These notes on dress apply only to the rank and file of the men; the aristocracy and higher official classes nearly all wear Chinese clothes. The wealthy ladies, however, all seem to favour the costume of their own country.

The rainfall being slight in this part of Tibet, the houses are all built with flat mud roofs. The walls are of stone, built like a dry stone dyke, and in larger buildings of several stories are very thick through at the base, making a batter up the outside of the wall. The ground floor of the house usually serves as a byre; the weary wayfarer, finding his way to the foot of the rickety ladder that serves for a staircase, has, like Agag, to 'tread delicately.' In most houses—even those inhabited by the wealthier people—a heterogeneous collection of pigs, sheep, goats, cows, and sometimes ponies are driven into the byre at night and the door is barred. Sometimes there is an enclosed yard as well, and in this case stables are often made along one wall of the yard.

Doors are generally made with the hinge-pin on the door itself and the socket on the jamb; in old doors in England it is usual to find the order reversed. Doors are secured, as a rule, with wooden bolts of generous dimensions, or sometimes by Chinese iron padlocks. There were in the province of Kongbo some most ingenious hollow bolts which were locked by wooden pins held in the door-jamb. When the bolt was pushed home the pins fell into holes in the wooden bolt and held

it secure. To unfasten the bolt a key made of a specially-shaped piece of wood had to be inserted into the bolt to lift up the pins; the bolt could then be withdrawn.

Windows, as a rule, are fitted with wooden shutters which are secured by a wooden latch. In some of the better-class houses the window-frames are fitted with wooden lattice frames over which paper is pasted. This is evidently an introduction from China. We met one magnate who was so far in advance of the times as to import glass from India for the centres of his paper-covered windows, which were protected outside by wire-netting.

When the primitive nature of the tools used by carpenters in Tibet is considered, the work is found to be of quite a high order. The saw is unknown, so that all trees are felled by the use of the axe alone. The logs are split up with axes and wooden wedges, and the shaping of beams or planks is done with the axe or the adze. The latter implement is largely used, as in India. In the forest we used to see planks cut from *Tsuga* wood (*Cha* in Tibetan) measuring 8 feet by 17 inches by 4 inches, and well squared up.

As one travels farther into the more rainy parts of South-eastern Tibet one finds that the flat mud roofs are replaced by sloping roofs made with wooden shingles. These shingles generally measure about 18 inches by 6 inches, and are cleft from Coniferous timber. Over the beams of the roof a framework of laths is spread, on which the shingles are laid, the upper rows overlapping those beneath. A line of laths is put along each row of shingles, and large stones are placed on them to prevent the roof blowing off in windy weather.

These roofs are, on the whole, pretty water-tight, but leaks are not unknown during the rainy season. When the inhabitants climb upon the roof, armed with long

poles with which to move the wooden slabs, the last state is, not infrequently, worse than the first.

Interior fittings in Tibetan houses are not very numerous ; they comprise nothing much besides necessities. The most common form of fireplace is of the open-hearth variety, and consists of a square fireplace on a flat stone slab surrounded with either a stone or wooden curb. Iron dogs are placed upright in the fireplace to support cooking-pots. We could never discover where these dogs are made ; they appear to be cast, and are common throughout South-eastern Tibet. One sometimes finds a more elaborate form of fireplace which is in the nature of a kitchen-range reduced to its simplest terms. The range is built of stone and clay and has round holes in the top upon which pots are placed. The position of the fireplace would appear to be quite immaterial ; sometimes it is in the middle of the room, and sometimes against one wall. Chimneys are not supplied ; the smoke finds its way out by the line of least resistance.

This about exhausts the furniture of the average Tibetan house. Chairs are not required, for it is the custom of the country to sit on the floor. The very great, for whom the floor is too hard, sit upon cushions. Beds consist of a few hard cushions made like carriage cushions, and bed-clothes are provided by spare clothing. Chairs and tables are rare, except in the houses of the wealthy. They are usually of Chinese origin or copies of Chinese articles. The same applies to cupboards and chests ; the only things to be found of native origin are *yakdahns*, which are probably common to all parts of Central Asia.

Cooking-pots and household utensils vary greatly ; those most characteristic of the country are the teapots. These are made either of copper, brass, or earthenware.

The metal pots are made largely at Shigatse, and also, I believe, at Darghi. The earthenware teapots are made the same shape as those of metal, but I could never discover their place of manufacture. A certain number of kettles and teapots of enamelled iron are beginning to be seen in Tibet; these are made in Japan and probably imported by way of India. It is noticeable that the Japanese copy exactly the Tibetan designs for the shape of their reproductions. The ordinary pot used for cooking and for boiling water is of brass, and is made with shoulders as well as lips. These are made in various sizes; we used to see pots sometimes measuring as much as 3 feet in diameter. The larger pots are used for parching barley and for fermenting grain.

In the province of Kongbo stone pots are used to a large extent. These are of local manufacture and are very well made. They are wider at the bottom than at the top, and are made with small lugs to serve as handles. I endeavoured to get some of these stone pots made in order to bring back specimens; but, owing to Oriental procrastination, they were never completed.

Brass-bound wooden teapots and jugs are often to be seen on shelves in Tibetan kitchens. They are of fine workmanship and the brass-work is frequently chased. I never saw any of these in use; they appear to be kept as ornaments.

Stone mortars and pestles are very common. The mortars are made from a block of hard stone hollowed out and smoothed by constant use. The pestles are generally any stone of a convenient shape. Mortars vary in size according to the purposes for which they are required. A small mortar is usually kept in the kitchen for grinding up chilis and spices for culinary operations, while larger ones are kept for mixing dyes. In the jungle country of the Tsangpo gorge and in Bhutan one

sees the type of mortar and pestle common over a large part of Asia. The mortar is made from the trunk of a tree, and the pestle is a ponderous double-ended affair of wood. We never met with this type in Tibet proper.

Hand-mills are found in some villages, but it is more common to find mills worked by water-power. The ordinary type of hand-mill consists of an upper and nether millstone supported on battens over a hollowed-out tree-trunk. The grain is put into a hole in the middle of the upper stone, which is revolved by means of a wooden handle. The flour falls into the tree-trunk which forms a horizontal trough. The water-mills work on the same principle, the wheel being placed horizontally and the shaft vertically. Water-wheels are used all over the country for turning prayer-drums; but, even if one admits that this saves the inhabitants the trouble of saying their prayers, it seems to be a case of misdirected energy.

In South-eastern Tibet the corn is threshed by hand, and not by the method, so common in many parts of Asia, of letting oxen trample the grain out of the ear. Threshing-floors are provided in every village—often the flat mud roofs of byres are used. Flails are made without a leather joint between the two parts; the movable part of the flail is bound to a wooden pin which fits into a hole at the top of the handle. The movable part of the flail is usually made of a willow stick about as thick as a man's forefinger and about 5 feet long. Threshing is done both by men and women, to the accompaniment of singing.

After threshing, the grain is winnowed from the chaff by being poured out of one basket into another. Large shallow trays, about 4 feet square, are used to receive the grain, which is poured from a smaller basket held up high by the operator. This process is repeated until

the chaff is all blown away. The grain is stored in baskets about 3 feet deep, or else in sacks.

Tsamba, or parched barley-meal, which is the staple food of the country, is made by parching the grain over a fire before milling it. All classes live chiefly on *tsamba*; sometimes it is eaten raw, sometimes mixed with hot water or tea into a kind of gruel, and sometimes it is eaten with red chilis. The great advantage of this diet is that it requires little or no cooking. Tea, *tsamba*, and butter are the chief staples of the country. Tibetan tea, as is well known, possesses certain peculiarities of its own. But its unpleasantness has, to my mind, been greatly exaggerated. When drinking native tea the great thing to do is to look upon it as soup rather than tea as we understand it; if this is done it will be found to go down like nectar. It is certainly an excellent beverage in a cold climate, and particularly good when made into a sort of broth with *tsamba*.

The leaf from which Tibetan tea is made is in the form of brick tea imported from China. A handful or so is broken up and dropped into a wooden churn, the leaves are scalded with boiling water, a good-sized lump of butter and a handful of salt are added, and the whole concoction is churned up and down with a wooden piston. This action emulsifies the butter, and the liquid can be strained off into a teapot. Earthenware jars filled with glowing charcoal are often used as stands for teapots, to keep the tea warm.

The plough used in South-eastern Tibet does little more than scratch the surface of the ground. It consists of only two parts: the beam and the share. The beam is about 7 feet long and is usually made from a bough of evergreen oak along with part of the trunk. This provides the necessary elbow in the beam. The

short arm is mortised into the share, which is also made of oak. Wedges are driven into the mortise and the share is further secured by a lashing of thongs to the bend of the beam. A yoke of oxen are attached to the end of the ploughshare, and the ploughman leans his weight on a handle on the upper end of the share in order to encourage the point to go deeper into the ground. Since the ploughshares are not iron-shod nor hardened in any way, they last only a short time in stony ground.

Besides the plough there are not many agricultural implements in use : such as there are resemble those that the men of prehistoric times might have used. The most usual form of mattock is a conveniently-shaped branch with a handle about 3 feet long, and with the point hardened in the fire. These are used indifferently for hoeing or as a mallet for breaking-up clods. In a few places iron-headed mattocks are used, but they are not very common. Clods in the fields are sometimes broken up by pulling a log of wood over a field with oxen ; the driver usually helps by balancing on the log. We used to see reaping-hooks in some of the villages, but I think these are used only for cutting grass. Barley and wheat crops seem always to be pulled up by the roots. The method used for making hay—harvest coming during the wet season—is to put big wooden ladders against trees and to festoon them with hay. This method is not unlike that prevailing in some parts of the west coast of Scotland, where the hay-crop is hung on the fence to dry.

In Kongbo, besides barley and wheat, oats are sometimes grown along with tares ; this crop is usually cut green and fed to stock. Potatoes are obtainable at times, also carrots and white turnips. In a few places in the Tsangpo Valley we used to get green peas as a

great luxury. The only vegetable one can apparently always be sure of obtaining is onions. These are small, but may be described as 'full-flavoured.' About the only fruit trees regarded in any degree of economic significance are walnuts and peaches. Kongbo, it appears, has always been famous for its walnuts; they are certainly large, and provided with phenomenally thick shells. The natives cannot be said to pay much attention to the 'care and maintenance' of the peach-trees, unless the ruthless pollarding to which they are subjected is calculated to improve their fruit-bearing qualities. Peaches are collected in the autumn by the simple expedient of stoning the trees, and gathering up the fruit that falls to the ground. The fruit is dried in the sun on the roofs of the houses, and is subsequently chewed during the winter by the inhabitants. It is certainly a sound investment, for, sucked conscientiously, a sun-dried peach lasts a long time.

Textiles in South-eastern Tibet are of local manufacture, and of only one quality: presumably 'the best.' Cloths of fine texture are probably imported: the jungle tribes (Mönbas, etc.) make their cloth for their own clothes. Wool is collected and spun into yarn by men and women by means of wooden spindle whorls. The yarn is wound on to spools which are fitted into the shuttle as required. The loom has a strong wooden frame, the warp is horizontal, and the threads are attached to the frame at one end. The finished cloth is rolled up round the cloth beam as it is made. There are four heddles which are worked by wooden treadles placed below the loom. Looms vary slightly in different parts of the country, but only in detail: they all work on the same principle. The cloth is usually made about 2 feet in width and is thick and soft in texture. As a rule it is left the natural grey colour, but sometimes it is

dyed red. We never saw any native vegetable dyes: they all seemed to be imported from India.

The province of Pome appears to specialize in the manufacture of weapons of offence and defence. The best swords are said to come from thence; though swords are made in the village of Lunang in Kongbo. This same village is also famous for the manufacture of metal plates for belts. These plates are of iron or brass or sometimes a combination of the two. They are carved in very coarse sort of filigree patterns, but the workmanship is excellent. They are worn by every woman in Kongbo. Matchlocks are made in Pome and there is said to be a very good gunsmith in Showa—the capital of the province. Fire-arms are not very common in Kongbo, though one sees plenty of them in Pome. This is probably because in the latter province shooting game is considered quite a legitimate pursuit. How sport is reconciled with the Buddhist doctrine is not explained.

One industry which appears to be peculiar to Kongbo is the making of hats. These are of a coarse kind of felt made from yak hair and are in the shape of a parson's wideawake hat. They are made both black and white, and are a very suitable form of head-gear in a country where the rainfall is considerable. They are worn alike by men and women during the monsoon.

This ends some rather haphazard notes on the buildings, furniture, ornaments, and articles and implements in common use in part of South-eastern Tibet. The writer has attempted only to deal with part of the provinces of Takpo, Kongbo, and Pome, and the list has no pretensions to being a complete inventory of domestic and agricultural appliances; but it is hoped that it may give some slight idea of the conditions and state of civilization in this part of the country.

GENERAL INDEX

- Abors, 110, 252
 Customs of, 303 *et seq.*
Atsa Gompa, 169
 Tso, 168, 171, 177
- Banda La, 169
- Chake, 38
Changu, 19
Chökorchye, 34
Chomodadzong, 159
Chomo Dzong, 175
Chunyima, 149
Churung Chu, 213
- Daphlas, customs of, 303 *et seq.*
Debshi La, 281
Dengshu, 279, 282
Doshong La, 40, 90, 98, 116, 126, 190,
 212
Drukla, 163, 262
 Chu, 161, 163
Dzinchi, 272
- Glaciers, 157
Gogon Gompa, 266
Gompo Ne, 226, 232
Gyala, 132
 Peri, 143, 182, 230, 232
Gyamda, 120, 172, 176
 River, 48, 58, 169
Gyantse, 21, 23 *et seq.*
Gyara, 161
Gyatsa, 34
- Himalayan Range, 255-6
- Je, 158
- Kachins, 148
Kale La, 279
Kampas, customs of, 110, 187, 251,
 252, 308
Kangra, 173
Karma La, 254
Kolep, 161
Kongbas, customs of, etc., 110, 149
Kongbo, 174, 187, 246
 Old forts in, 162
 Nga La, 36
 Peri, 47
Kyikar, 135, 144, 194
- Lachen La, 168
Laru, 172
Lhari River, 169
Lilung, 39
Lö, 157
Lopas, customs of, etc., 110, 187, 229,
 251, 252, 254, 303 *et seq.*
Lubong, 254
Lumo, 258
Lunang, 72, 146
Lung La, 33
Lusha, 46
- Mandaling, 143
Marus, 148
Mishmis, customs of, 303 *et seq.*
Monbas, qualities and customs of,
 110, 123, 126, 187, 192, 194, 221,
 238, 246, 251, 252, 288, 303 *et seq.*
Musi La, 199
- Nambu Gompa, 155
 La, 176
Namcha Barwa, 109, 143, 170, 182,
 225
Namla Karpo, 159
Nam La, 130, 142, 195
 Tso, 139, 156
Namse, 173
Nang Dzong, 28
Nathu La, 19
Nera Yu Tso, 281
Neten Dzong, 28
Nungs, 148
Nyabu, 174
Nyamoshung, 276
Nyima La, 85, 90, 182
- Pab Ri, 45
Pangchen, 289
Pasang Tso, 157-8

- Pasum Chu, 161
 Kye La, 48, 168, 176
 Payi, 225
 Pe, 95, 126, 187, 305-6
 Pemaden, 254
 Pemakö, 109 *et seq.*, 176, 187
 Pemakochung, 133, 204
 Phari, 20
 Pingso, 234
 Pobas, origin, qualities, customs of,
 etc., 110, 166, 194, 251, 252, 311
 Pö La, 286
 Pome, 110, 146 *et seq.*, 176, 187
 Pongcham, 254
 Pu-chu, 49
 Pungkar, 167
 Puparang, 143

 Riudechen, 27
 Rong Chu, 58, 72, 152, 257

 Salween Divide, 176
 Samtenling Chu, 159
 Sanglung, 109, 209, 223, 225
 Sechen La, 223
 Sengchen, 235
 Sengetong, 230
 Shans, 148
 Shigar Chu, 215
 Shingche Chögye, 131, 204
 Shingso Chu, 159
 Shoga, 160, 161, 163
 Sikung Chu, 280
 Sü La, 225

 Talaings, 148
 Talung, 209

 Tating, 278
 Tawang River, 290
 Temo, 153
 Gompa, 54 *et seq.*
 La, 54, 58, 85
 Temu Tse, 124
 Thongdem, 257
 Tibetans, customs of, *etc.*, 303 *et seq.*
 Tongkyuk River, 152, 258
 Dzong, 152, 198
 Torgor La, 283
 Tramdo, 172
 Trap, 31
 Trashigang Dzong, 292, 294
 Tro La, 48, 144, 171, 267
 Trube, 135
 Trungsashö, 35
 Tsachugang, 219
 Tsangpo, 30 *et seq.*, 95, 126, 130, 134,
 144, 149, 176, 182, 199 *et seq.*,
 219 *et seq.*, 244
 Confluence of Po-Tsangpo and
 Kongbo Tsangpo, 222, 232
 Tsela Dzong, 41, 172, 176
 Tsetang, 28, 274
 Tsogo, 159
 Tsöna Dzong, 284
 Tsosong Gompa, 160
 Tuma, 21
 Tumbatse, 54, 64, 72, 172, 198

 Yamdrok Tso, 26
 Yarlung Valley, 275
 Yartö Tra La, 276
 Yigrong, 48, 168
 Yortong, 126

INDEX OF PLANTS

- Abies, 86
 Aconitum, 24, 29
 Adenophora, 81
 Akebia, 216
 Androsace, 29, 32, 96, 268
 Arenaria, 170
 Arisæma, 115, 122
 Aster, 118

 Berberis, 24, 43, 57, 66, 115, 151, 216
 Box, 36
 Buddleia, 38, 46, 174

 Campanula, 29
 Caragana, 24, 32, 43, 139
 Cassiope, 44
 Castanopsis, 216
 Ceratostigma, 32, 43, 131, 176
 Clematis, 24, 131, 174
C. montana, 32, 48, 57
Codonopsis convolvulacea, 131
Cælogyne cristata, 18
 Corydalis, 170
 Cotoneaster, 32, 174
 Crawfordia, 229
 Cucurbita, 131
Cyananthus (*K.W.* 6082), 153
C. lobatus, 81, 178
Cynoglossum amabile, 161, 176

 Daphne, 131
 Delphiniums, 170
 Desmodium, 131
 Deutzia, 216
 Diapensia, 190
 Didissandra, 24
 Dracocephalum, 168

 Elæagnus, 46
 Enkianthus, 125
 Ephedra, 29
Eriophyton Wallichianum, 170
 Erytrichium, 161, 176
 Euonymus, 38, 46, 86, 115

 Floras, 53, 63, 91, 116, 138, 141, 216

 Gentian, 24, 74, 118, 174
Gentiana amœna, 170
G. (*K.W.* 6221), 187
G. sino-ornata, 74
G. Waltonii, 268

 Hippophæ, 24, 32, 46, 57
 Hydrangea, 131

 Incarvillea, 24, 32, 170, 268
 Iris, 43, 207
I. '*Sibirica*,' 74
Isopyrum grandiflorum, 141, 154

 Lactuca, 170
Lilium tigrinum, 174
L. (*K.W.* 6034), 150
L. (*K.W.* 6428), 296
 Lloydia, 87
 Lonicera, 66, 85, 86, 112, 115, 117,
 125, 174, 178
L. (*K.W.* 5776), 183
L. Webbiana, 84, 95
Luculia gratissima, 229

Magnolia Campbellii, 18
 Meconopsis, 24, 29, 33, 61, 62
M. Baileyi, 57, 61, 75, 76, 136, 145,
 178
M. betonicifolia, 76
M. brevistyla, 63
M. Cawdoriana, 63, 93, 179
M. '*Cumminsia*,' 63
M. Florindæ, 127, 145
M. horridula, 22, 168
M. impedita, 62, 141, 179, 184
M. (*K.W.* 5766), 91, 93
M. (*K.W.* 5910), 92
M. (*K.W.* 6245), 93
M. latifolia, 63
M. Lloydia, 117
M. Pratiniana, 62, 88, 129
M. pseudointegrifolia, 61
M. racemosa, 267
M. simplicifolia, 61, 63, 115, 179, 184
M. speciosa, 63
M. superba, 76
 Morina, 32, 43, 82
 Nomocharis, 127
N. nana, 91, 186

 Oleaster, 38
 Onosma, 161, 175
Orchis Cirrhopetalum emarginatum,
 224
O. latifolia, 57

- Pæony, 48
 Pedicularis, 118
 Picea, 38, 86
Pinus Armandi, 96
P. (K.W. 6315), 212
 Piptanthus, 38
Populus alba, 43
P. 'Golden Poplar', 43
Potentilla fruticosa, 24, 32, 139, 269
 Primula, 29, 33, 75, 78
P. atricapilla, 186
P. atrodentata, 33, 34, 44, 57, 73, 75, 179
P. Baileyana, 140, 195
P. Cawdoriana, 186
P. chionota, 114, 117
P. chungensis, 57, 76, 178
P. Cockburniana, 76
P. denticulata, 19, 33
P. Dickieana, 114
P. falcifolia, 106, 118
P. Florindæ, 76, 153, 178
P. glabra, 106
P. kongbænsis, 47
P. latisecta, 92, 94, 160, 186
P. Littledalei, 141, 195
P. Maximowiczii, 94, 138, 186
P. microdonta, 74, 75, 77, 130, 136, 156, 178, 179, 268
P. Morsheadiana, 106, 118
P. ninguida, 66, 87, 179
P. 'Nivalis', 138, 170
P. philoresia, 88, 106, 171
P. pseudocapitata, 183
P. pudibunda, 74, 88, 130, 140, 141, 179
P. pulchella, 160
P. pulchelloides, 48, 95, 154
P. pygmæorum, 23, 84
P. rhodochroa, 106
P. rigida, 87, 91, 92, 179
P. Roylei, 47, 75, 86
P. sinopurpurea, 66, 179
P. szechuanica, 94, 138, 195
P. tibetica, 32, 57, 74, 75, 178
P. Valentiniana, 106, 114, 117
P. Walshii, 87, 179
P. Waltonii, 24, 32, 156
Pyrola Forestii, 96

Rheum nobile, 87
 Rhododendrons, 29, 88, 96, 99 *et seq.*, 106, 116, 118, 125, 126, 136, 176, 200 in frost, 119, 120
Rh. Anthopogon, 36, 60, 71, 104, 186, 267, 287
Rh. 'Arboreum', 287, 288
Rh. arboreum, 18, 288, 290
Rh. barbatum, 18, 19
Rh. 'Barbatum', 44, 65, 71, 190, 207

Rh. 'Brachyanthum', 207
Rh. 'Cephalanthum', 44, 46
Rh. cinnabarinum, 20
Rh. 'Cinnabarinum', 113, 136, 288
Rh. damascenum, 102
Rh. Edgeworthii, 208
Rh. elæagnoides, 120, 139, 140, 195
Rh. Falconeri, 18, 107, 115
Rh. glaucum, 18
Rh. 'Glaucum', 99, 100
Rh. grande, 18, 126, 201, 202, 208, 215, 239
Rh. 'Grande', 44, 192, 200
Rh. 'Irroratum', 202
Rh. 'Lacteum', 44, 46, 65, 71, 190, 192, 287
Rh. Lapponicum, 36, 37, 38, 44, 46, 47, 60, 71, 72, 82, 130, 186, 267
Rh. 'Lepidotum', 71, 82, 288
Rh. Maddeni, 200, 201, 213, 224, 288
Rh. 'Maddeni', 202, 211, 216
Rh. mekongense, 105
Rh. 'Neriiflorum', 102
Rh. Nuttallii, 236, 244
Rh. 'Oreotrephe', 72, 82, 95, 181
Rh. 'Saluenense', 71, 97, 186, 190
Rh. sp. (K.W. 5851), 105
Rh. 'Souliei', 46, 58, 65, 95, 138, 189
Rh. 'Taliense', 36, 44, 72, 267
Rh. Thomsonii, 18, 20, 58, 72, 98, 192, 201
Rh. trichocladum, 115, 118, 124
Rh. triflorum, 49
Rh. 'Triflorum', 38, 72, 288
Rh. 'Triflorum' 'Mahogany Triflorum', 44, 47, 82, 136
Rh. vaccinioides, 200, 213
Rh. virgatum, 202, 213, 218
Rh. 'Virgatum', 208
Rh. 'Virgatum' (K.W. 6069), 150
Rh. Wightii, 20
 Ribes, 115
 Rosa, 85, 86, 131
R. sericea, 24, 32, 43, 57, 115, 118
 Rowan, 115
 Rubus, 115, 125
R. lineatus, 216

 Salvia, 174
 Saussureas, 170
 Saxifragia, 170, 186
 Sedum, 88
Sophora viciifolia, 24, 32, 43, 48
 Spiræa, 38
 Strobilanthes, 229

Ulmus pumila, 28

 Vaccinium, 123, 189
 Viburnum, 115, 122

