THE GEOGRAPHICAL JOURNAL

VOLUME LXXXIX

JANUARY TO JUNE

1937

PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL

EDITED BY THE SECRETARY

THE ROYAL GEOGRAPHICAL SOCIETY

KENSINGTON GORE LONDON S.W.7

EDWARD STANFORD LTD. 12 LONG ACRE W.C.2

AND 43 WHITEHALL S.W.1

ROYAL GEOGRAPHICAL SOCIETY

Patrons

HIS MAJESTY THE KING

HER MAJESTY QUEEN MARY

Honorary President

H.R.H. THE DUKE OF CONNAUGHT, K.G., G.C.B., G.C.S.I.

THE COUNCIL

(*Elected* 19 *October* 1936 *for the Session of* 1936–37)

President : Professor Henry Balfour, F.R.S.

Vice-Presidents

Lieut.-Col. Sir John Chancellor, G.C.M.G., G.C.V.O., D.S.O., R.E.

Colonel Sir Charles Close, K.B.E., C.B., C.M.G., SC.D., F.R.S.

Major-General Sir Percy Cox, G.C.M.G., G.C.I.E., K.C.S.I. (deceased)

Admiral Sir William Goodenough, G.C.B., M.V.O.

Dr. T. G. Longstaff

Lieut.-Col. Sir Francis Younghusband, K.C.S.I., K.C.I.E.

Treasurer—The Lord Plender, G.B.E.

Trustees—The Lord Biddulph ; The Most Hon. the Marquess of Zetland, G.C.S.I., G.C.I.E.

Honorary Secretaries—W. L. Sclater ; J. M. Wordie

Foreign Secretary—The Right Hon. the Lord Howard of Penrith, G.C.B., G.C.M.G., C.V.O.

Members of Council

Major R. A. Bagnold

David A. Bannerman, M.B.E.

George Binney

Col. P. K. Boulnois, O.B.E., M.C.

Leonard Brooks

Sir Harcourt Butler, G.C.S.I., G.C.I.E.

Miss Gertrude Caton-Thompson

Stephen L. Courtauld, M.C.

Col. H. L. Crosthwait

Vice-Admiral Sir Percy Douglas, K.C.B., C.M.G.

E. H. Keeling, M.C., M.P.

Professor Kenneth Mason, M.C.

Dr. Hugh Robert Mill

The Rt. Hon. the Lord Moyne

Mrs. Patrick Ness

Dr. K. S. Sandford

J. M. Scott

Dr. Dudley Stamp

Lieut.-Col. E. L. Strutt, C.B.E., D.S.O.

Brig.-Gen. Sir Percy Sykes, K.C.I.E., C.B., C.M.G.

Brig.-Gen. M. E. Willoughby, C.B., C.M.G., C.S.I.

Secretary and Editor of Publications—Arthur R. Hinks, C.B.E., F.R.S.

Librarian—G. R. Crone

Map Curator—F. Allen

Bankers—Martin's Bank Ltd. (Cocks, Biddulph Branch), 16 Whitehall, S.W.1

CONTENTS

NO. 1 *JANUARY* 1937

THE CORAL ISLANDS AND ASSOCIATED FEATURES OF THE GREAT BARRIER REEFS. By J. A. Steers . . . 1

THE PRE-COLUMBIAN DISCOVERY OF AMERICA. By Jaime Cortesão 29

THE SAIDMARREH LANDSLIP, SOUTH-WEST IRAN. By J. V. Harrison and N. L. Falcon 42

THE CRATER OF NYAMLAGIRA. By I. Mitford-Barberton, A.R.C.A. 48

SOME NOTES ON CONVENTIONAL SIGNS FOR TOPOGRAPHICAL MAPS. By Lieut.-Col. F. J. Salmon . . . 50

THE COOK MEMORIAL AT POINT VENUS, TAHITI . . . 54

GLACIOLOGY OF THE GREENLAND ICE-CAP: Review by Michael Spender 59

REVIEWS. *EUROPE:* Hochbulgarien. II. Sofia. Bulgaria, past and present. Les Grands Causses. A geography of Europe. Walking in Dorset. Walking in Cornwall. Roman Britain and the English settlements. The old towns of England. The parish churches of Norfolk and Norwich. The Mesolithic settlement of Northern Europe. In the heart of Europe. Over Tyrolese Hills. Portugal. *ASIA:* Ancient irrigation works in Ceylon. The new Mongolia. Cambodian glory. *AFRICA:* Land without shade. The paradise of fools. Unknown Liberia. Durban. The birds of tropical West Africa, with special reference to those of the Gambia, Sierra Leone, the Gold Coast and Nigeria. Zambezi days. *NORTH AMERICA:* An illustrated manual of Pacific Coast trees. The birth of Western Canada. Steel of Empire. Amerikanische Landschaft. *AUSTRALASIA AND PACIFIC:* Stone-age Bushmen of to-day. And far from home. Agricultural organization in New Zealand. *CARTOGRAPHY:* Orbis Arctoi Nova et Accurata Delineatio, auctore Andrea Bureo Sueco 1626. Geodetic operations in the United States, Jan. 1st, 1933 to Dec. 31st, 1935. *ECONOMIC AND HISTORICAL GEOGRAPHY:* World immigration, with special reference to the United States. Le pétrole et son économie. *GENERAL:* Isles of the Seven Seas. Geographic disarmament. A commercial geography. Elements of geography. The complete book of Ski-ing 62

THE MONTHLY RECORD: Early maps of Scotland. Khairpur State, Sind. Gravity measurements in East Africa. Water supply in the Wheat Belt and Kalgoorlie Regions, West Australia. Lady Julia Percy Island, Western Victoria. Soil drift in South Australia. Origin of submarine troughs. Icelandic-Danish Expeditions to Vatnajökull 90

MEETINGS: Session 1936–1937 96

MAPS:

Fife Island 15

The Saidmarreh landslip 44, 46

Point Venus, Tahiti 58

Queensland Coast and adjacent reefs . . . . *following page* 96

PHYSIOGRAPHY OF THE REGION TO THE WEST AND SOUTH-WEST OF LAKE RUDOLF. By ARTHUR M. CHAMPION 97

THE CORAL ISLANDS AND ASSOCIATED FEATURES OF THE GREAT BARRIER REEFS. By J. A. STEERS . . . 119

A LINGUISTIC MAP OF WALES ACCORDING TO THE 1931 CENSUS, WITH SOME OBSERVATIONS ON ITS HISTORICAL AND GEOGRAPHICAL SETTING. By D. TREVOR WILLIAMS 146

NEW JOURNEY TO THE WESTERN SAHARA, 1935–1936. By THEODORE MONOD 152

LAND UTILIZATION IN ENGLAND AT THE END OF THE EIGHTEENTH CENTURY. By GORDON EAST 156

REVIEWS. *EUROPE :* A geography of Europe. No longer Poles apart. Scrambles amongst the Alps. *ASIA :* India's mineral wealth : A guide to the occurrences and economics of the useful minerals of the Indian Empire. *AFRICA :* Journey without maps. *NORTH AMERICA :* Die räumliche Gliederung der Landwirtschaft im nördlichen Kalifornien. The kingdom of Saguenay. *AUSTRALASIA AND PACIFIC :* The odyssey of a digger. *POLAR REGIONS :* Antarctic discovery : The story of the Second Byrd Antarctic Expedition. *PHYSICAL AND BIOLOGICAL GEOGRAPHY :* Notes on phenomena of a geophysical nature. Handbuch der Klimatologie. Band I, Teil B : Die klimatologischen Elemente und ihre Abhängigkeit von terrestrischen Einflüssen. Band I, Teil C : Das geographische System der Klimate. Band I : Titel, Vorwort, Inhalt, alphabetisches Sachregister. Handbuch der Klimatologie. Band II, Teil J : The climates of North America. *CARTOGRAPHY :* Map making. *ECONOMIC AND HISTORICAL GEOGRAPHY :* Scott of the Shan Hills : Orders and impressions. Indies adventure : The amazing career of Afonso de Albuquerque. Georg Wilhelm Steller : The pioneer of Alaskan natural history. *GENERAL :* Harpooner : A four-year voyage on the barque *Kathleen*, 1880–1884 . . . 173

THE MONTHLY RECORD : Summer floods in Sonoyta Valley, Mexico. Glaciation of the Bantry Bay District. Rainfall map of Yugoslavia. Bibliographie géographique internationale, 1935. Recent geographical indexes. Monographs on economic geography of Poland 188

OBITUARY : John Hardwick Reynolds 191

MEETINGS : Session 1936–37 192

MAPS :

Distribution of the Welsh language 148
The Western Sahara 153
Land utilization in Middlesex 158
Land utilization in Wiltshire 164
Land utilization in Somerset 168
Turkana Province, Kenya Colony . . . . *following page* 192
Queensland Coast and adjacent reefs . . . *following page* 192

THE FIRST CROSSING OF ANTARCTICA. By LINCOLN ELLSWORTH 193
CLIMATIC CYCLES. By PROFESSOR D. BRUNT 214
THE ARUN RIVER DRAINAGE PATTERN AND THE RISE OF THE HIMALAYA. By L. R. WAGER 239
THE BRITISH GRAHAM LAND EXPEDITION, 1934–37. By F. D. 250
A NOTE ON THE OXFORD UNIVERSITY ELLESMERE LAND EXPEDITION, 1934 254
PEARY'S JOURNEY TO THE POLE: Review by A. R. H. and J. M. W. 255
THE VALLEY OF THE LOWER MEUSE: Review by DAVID L. LINTON 260
THE LAST OF THE ZERZURA LEGEND: Review by R. A. BAGNOLD 265
REVIEWS. *EUROPE :* Under Jane's wings. The Peace Settlement in the German Polish borderlands. Du nouveau sur Idrīsī. *ASIA :* Palestine on the eve. Archaeological history of Iran. The ascent of Mount Stalin. The English factories in India. The Snellius-Expedition in the eastern part of the Netherlands East-Indies, 1929–1930, Vols. II, V. The march of Japan. Japanese trade and industry—present and future. The industry and trade of Japan. New maps of the Chinese Provinces. Comptes-rendus de onze années (1923–1933). *AFRICA :* Coconuts and créoles. The Cambridge History of the British Empire. The Cape-to-Cairo dream : A study in British imperialism. *NORTH AMERICA :* Amérique septentrionale. *CENTRAL AND SOUTH AMERICA :* Land of to-morrow : A story of South America. *AUSTRALASIA :* Pacific relations : The races and nations of the Pacific area and their problems. *PHYSICAL AND BIOLOGICAL GEOGRAPHY :* Great earthquakes. Geographische Kausalität. *CARTOGRAPHY :* Map of Roman Palestine. *ECONOMIC AND HISTORICAL GEOGRAPHY :* Die Vorherrschaft der weissen Rasse. An introduction to the bibliography of Captain James Cook, R.N. Captain James Cook. Will Mariner : A true record of adventure. *GENERAL :* Elizabethan seamen 269
THE MONTHLY RECORD : The King's Accession and the Royal Patronage. Award of the Geographical Essay Prize. The Population of Berlin-Brandenburg. The cartographical work of Grazioso Benincasa. Climatic change in the Alps. Trade between the Roman Empire and the Free Germans. The accident to the O.U. Greenland Expedition, 1935. A rural economic survey of Siam. Tropical plants and world trade. International bibliography of geodesy 290
OBITUARY : 295
MEETINGS : Session 1936–37 296
MAPS :
Figures to illustrate Prof. Brunt's paper 214, 216, 217, 219, 220, 226, 228, 229
Position lines from Peary's observations 258
First crossing of Antarctica . . . . . . *following page* 296
Drainage areas of the Arun and Tista . . . *following page* 296

THE MOTOR ROUTE FROM PEKING TO KASHGAR. By SIR ERIC TEICHMAN, K.C.M.G., C.I.E. 297

FROM THE BRAHMAPUTRA TO THE CHINDWIN. By E. T. D. LAMBERT 309

THE ECONOMIC DEVELOPMENT OF THE SOVIET ARCTIC. By H. P. SMOLKA 327

THE POPULATION OF BENGAL, ITS DISTRIBUTION AND CHANGES: A CONTRIBUTION TO GEOGRAPHICAL METHOD. By ARTHUR GEDDES, D. ÈS L. (MONTPELLIER), PH.D. . 344

REVIEWS. *EUROPE:* Environment and nation: Geographical factors in the cultural and political history of Europe. A study of industrial Edinburgh and the surrounding areas, 1923–1934. The archaeology of Sussex. Grenoble: Étude de géographie urbaine. På Skidor Och Till Häst I Vatnajökulls Rike. Borderlands of language in Europe, and their relation to the historic frontier of Christendom. *ASIA:* Euphrates exile. Southern India: Its political and economic problems. Les batailles pour l'Himalaya, 1783–1936. *AFRICA:* Le Delta du Nil: Étude de géographie humaine. Three deserts. Afrikafahrt: eine Frau bei den Negern Westafrikas. Revisiting my Pygmy hosts. *NORTH AMERICA:* Settlement and the forest frontier in Eastern Canada. Landnahme und Kolonization in Canada, am Beispiel Südontarios. Atlas of American agriculture. *AUSTRALASIA AND PACIFIC:* Savage civilization. Back in the Stone Age: The natives of Central Australia. *PHYSICAL AND BIOLOGICAL GEOGRAPHY:* Paläogeographie und Tektonik. *ECONOMIC AND HISTORICAL GEOGRAPHY:* Turbulent journey: A life of William Bligh, Vice-Admiral of the Blue. *GENERAL:* Gods of to-morrow: A journey in Asia and Australasia 369

THE MONTHLY RECORD: Foreshore erosion on the North Sea coasts of Holland. The port of Naples. The *Calcutta Geographical Review.* Rainfall along the Chinese coast. Hydrology of Ethiopia. Recession of Kilimanjaro ice-cap 388

MEETINGS: Session 1936–37 392

MAPS:

The Assam–Burma Border 311
Figures to illustrate Dr. Geddes' paper . 346, 348, 351, 352, 356, 357
The motor route from Peking to Kashgar . . . . *following* 392

THE TENNESSEE VALLEY PROJECT. By GEORGE B. BARBOUR . 393

THE TRANSPORT OF SAND BY WIND. By MAJOR R. A. BAGNOLD 409

THE CORDILLERAN SECTION OF THE CANADA–UNITED STATES BORDERLAND. By STEPHEN B. JONES, University of Hawaii 439

RENEWED ACTIVITY OF THE GREAT GEYSER. By NIELS NIELSEN 451

THE ALLEGED PRE-COLUMBIAN DISCOVERY OF AMERICA. By G. R. CRONE 455

REVIEWS. *EUROPE :* A biography of Manchester. The preservation of our scenery. Beiträge zur Geologie der westlichen Mediterrangebiete. Albanian back-door. *ASIA :* Geologie von Asien. Les paysans du Delta Tonkinois : Étude de géographie humaine. Esquisse d'une étude de l'habitation annamite dans l'Annam septentrional et central. The wilderness of Zin. *AFRICA :* Desert encounter : An adventurous journey through Italian Africa. The Bornu Sahara and Sudan. *NORTH AMERICA :* Our natural resources and their conservation. Alone across the top of the world. Potlatch and totem, and the recollections of an Indian agent. *CENTRAL AND SOUTH AMERICA :* Battlefield of the gods : Aspects of Mexican history, art, and exploration. Sailing South American skies. *AUSTRALASIA AND PACIFIC :* The Red centre : Man and beast in the heart of Australia. Adventuring in coral seas. The Phantom paradise : The story of the expedition of the Marquis de Rays. *POLAR REGIONS :* Arctic journeys : The story of the Oxford University Ellesmere Land Expedition, 1934–5. Arctic adventure : My life in the frozen north. North of North Cape : The Arctic voyages of the " Norkap II." *PHYSICAL AND BIOLOGICAL GEOGRAPHY :* Plant and animal geography. Der Abbau der Gebirge. *ECONOMIC AND HISTORICAL GEOGRAPHY :* Sir Joseph Banks : His relations with Australia. Le Père de la Louisiane : Cavelier de la Salle. Lucie Duff Gordon, in England, South Africa and Egypt. *GENERAL :* High failure : Solo along the Arctic air route. The story of sail. The clear mirror : A pattern of life in Goa and in Indian Tibet. Escales autour du monde 461

THE MONTHLY RECORD : The Bianco Chart, 1448, and the " Pillars of Hercules." Jewish settlement in Ecuador. The Erciyas Daği region of Anatolia. Point Pigott, Mount Kenya. The Saidmarreh landslip, south-west Iran : correction 485

MEETINGS : Session 1936–37 488

MAPS :

The Tennessee Valley 395
Figs. to illustrate G. B. Barbour's paper 397
Figs. to illustrate Major Bagnold's paper 411–436
Profile of Crowsnest Branch (Canadian Pacific Railway) . . . 442
Percentage of British-born in total population 443
Canada–United States borderland . . . . . . *following* 448
Fig. to illustrate Dr. Nielsen's paper 453
Map showing Stóri Geysir 454

NORTHERN NEW GUINEA, 1936. By A. J. MARSHALL . . . 489

THE DADESSA VALLEY. By CAPTAIN A. DUNLOP . . . 507

THE GEOGRAPHICAL IDEAS OF ROBERT HOOKE. By E. G. R. TAYLOR 525

THE SINHARAJA RAIN-FOREST, CEYLON. By JOHN R. BAKER 539

HVITSERKR 552

REVIEWS. *EUROPE:* Great Britain: Handbook for travellers. London: A combined guidebook and atlas. London wall, through eighteen centuries. The islands of Ireland. Géographie de l'Europe. Castilian ochre. I saw Spain. Atti del XII Congresso Geografico Italiano, tenuto in Sardegna dal 28 aprile al 4 maggio, 1934. *ASIA:* Arabs of Central 'Iraq: Their history, ethnology, and physical characters. The story of the Stūpa. Afghanistan: A brief survey. Half the world is Isfahan. Land utilization and rural economy in Korea. *AFRICA:* Stone Age Africa: An outline of prehistory in Africa. More annals of Natal. *AUSTRALASIA AND PACIFIC:* Walkabout: A journey in lands between the Pacific and Indian Oceans. *POLAR REGIONS:* Icy hell: Experiences of a news-reel cameraman in the Aleutian Islands, Eastern Siberia and the Arctic fringe of Alaska. *ECONOMIC AND HISTORICAL GEOGRAPHY:* Fortune my foe: The story of Charles John Andersson, African explorer (1827–1867). The principles of economic geography. Raw materials or war materials? An atlas of empire. *GENERAL:* Britannia. Round the world without worries 557

THE MONTHLY RECORD: Medals and Awards 1937. Origin of the Great Lakes basins of North America. Dating volcanic explosions by tree rings in Lassen Park, California. A Woutneel map of 1602. The British Health Resorts Association's handbook 572

OBITUARY: Arthur Winston Moore 575

MEETINGS: Session 1936–37 576

MAPS:

North-east New Guinea 491
Northern coast of New Guinea 498
Western Abyssinia 509
Dadessa Valley 515
Southern Ceylon 540
The Sinharaja rain-forest . . . . *following* 542

FIGURE:

Leaves of dicotyledons 545

The GEOGRAPHICAL JOURNAL

Vol LXXXIX No 4 | *April 1937*

THE MOTOR ROUTE FROM PEKING TO KASHGAR: *A paper read at the Evening Meeting of the Society on 16 November 1936, by*

SIR ERIC TEICHMAN, K.C.M.G., C.I.E.

IN the autumn of 1935, when Sinkiang was settling down after the convulsions of the Mohammedan rebellion, I was sent on a special mission to establish contact, on behalf of the British Embassy in China, with the new Provincial Government in Chinese Turkestan. On investigating ways and means of making the journey, I decided, following the example of Dr. Sven Hedin and other pioneers of mechanical transport in Chinese Central Asia, to try out the possibilities of crossing the Gobi and traversing Sinkiang by motor truck. When I started to organize my expedition I found it difficult to obtain reliable information about the route and the feasibility or otherwise of motoring through to Kashgar; and the following description of the motor route, such as it was in 1935, from Peking to Kashgar may, it is hoped, prove of assistance to future travellers contemplating the same journey.

Motor transport has revolutionized travel in Mongolia and Chinese Turkestan, and one can nowadays accomplish in a few weeks the long journeys which formerly occupied many weary months of travel by camel caravan or cart. Motor cars and trucks first made their appearance in Chinese Central Asia after the war on the grassy steppes of Mongolia, which are specially suited to motor traffic, and as long ago as 1920 I travelled in one of Mr. Larson's Dodge cars from Kalgan to Urga. It was not however until many years later that motor traffic was developed in the more sandy wastes of the Western Gobi and Chinese Turkestan.

The overland traveller from China to Central Asia has the choice of two routes, the old Imperial cart road through Shensi and Kansu, and the camel trails through Inner Mongolia. While it is possible to get trucks through by the old cart road, the Mongolian route, by which I travelled, is the one better suited for motor traffic. There used formerly to be a third route, which was in fact the road generally followed by the Central Asian caravan trade, the camel trail from Kwei-hwa-ch'eng (Sui-yuan) through Outer Mongolia to Ku-ch'eng and Urumchi. This route, which was the one followed by early European travellers (including Captain Younghusband in the 'eighties), has

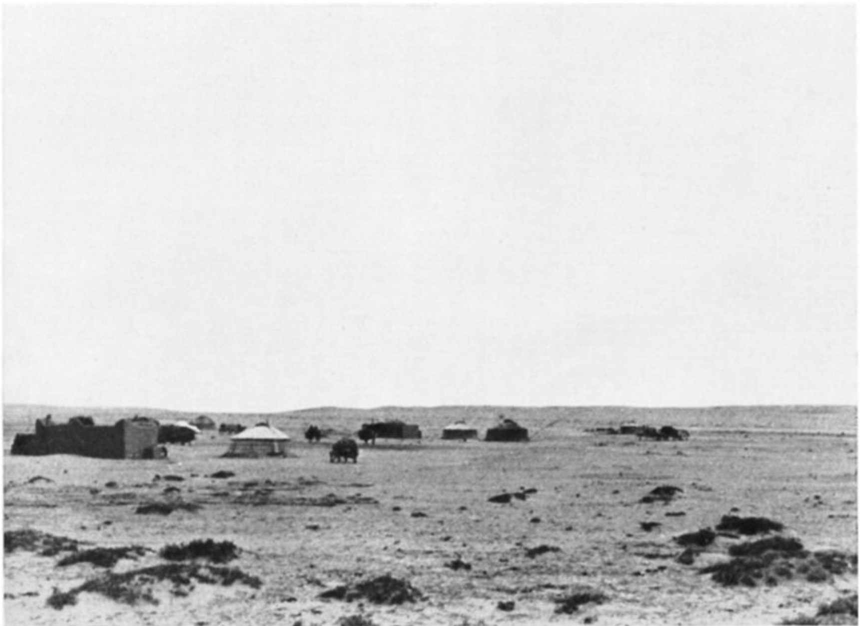
had to be abandoned owing to the closure of the Outer Mongolian frontier, and Chinese caravans taking the Gobi route have since followed the camel trails through Inner Mongolia *via* Shan-tan Miao and the Etsin Gol to Ming Shui and thence *via* Hami or Ku-ch'eng to Urumchi. This is the route, "The Winding Road," described by Mr. Lattimore in his book 'The Desert Road to Turkestan.' As it traverses the Gobi longitudinally for 1000 miles or so, it is a more barren and arduous road than that through Outer Mongolia, which, running most of the way across grassy steppe lands to the north of the Gobi Desert would, if available, afford better going for motor traffic between China and Turkestan.

Various attempts were made, after the closure of Outer Mongolia, to find a feasible motor trail from China to Sinkiang by the Inner Mongolian route. The difficulty lay in how to cross the wastes of sand, stretching across Inner Mongolia from Kansu and the Alashan desert to the Outer Mongolian border, which render the main camel trail *via* Shan-tan Miao impassable for motor traffic. A practical motor route across the Inner Mongolian Gobi was eventually discovered about five years ago by the Söderbom brothers (the sons of a Swedish missionary from Kalgan on the Mongolian border) and their Mongol guide Serat, who solved the problem of getting round the sands by working out a new route between Uni-Ussu and the Etsin Gol, an adaptation of minor camel trails and detours across the desert, along and close to the Outer Mongolian border.

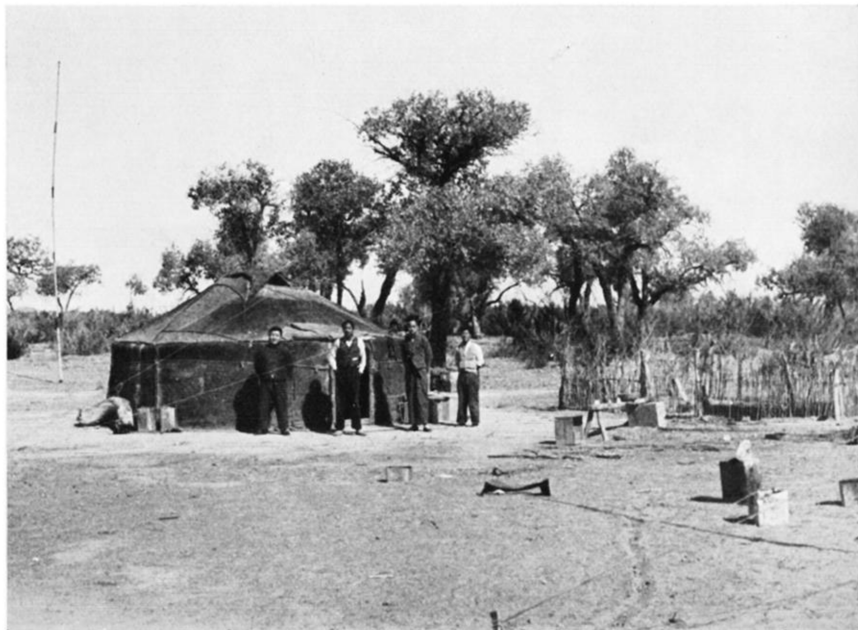
The new motor route across the Inner Mongolian Gobi, first traversed by the Söderboms and Serat in 1930–31, has since been followed by the Hardt-Citroën Expedition, by a party of China Inland missionaries proceeding to Urumchi, by Dr. Sven Hedin on his last expedition in 1934, and by the trucks of an American firm in Tientsin bringing down cargoes of produce from Sinkiang; and it is now used by the Sinkiang-Sui-yuan (*Sin-Sui*) motor transportation company, a Chinese concern which runs trucks between Sui-yuan and Hami at irregular intervals. Owing to political difficulties the trucks of this enterprising company are not allowed at present to go beyond Hami. While the credit for the original exploration of the route lies with Serat and the Söderboms, present-day travellers along it have reason to be grateful to the *Sin-Sui* company, who have discovered new detours and done a certain amount of work on the road and improved some of the worst places.

Although the new motor trail through Inner Mongolia is now frequently used by these Chinese trucks, every journey is an adventure and for much of the way a long struggle against the sand. Ten miles per hour is a satisfactory average in the Gobi, say 80 to 100 miles per day, if nothing untoward occurs. On the other hand, if things go wrong and one sticks badly in heavy ground, the whole day may be spent in covering a few miles. Nothing is obtainable on the 1200-mile journey across the desert from Sui-yuan to Hami, and it is necessary to carry a liberal supply of spare parts, as well as all kinds of implements and apparatus for extricating the trucks from sand and mud, including spades, picks, wooden planks, rope mats, towing hawsers and special jacks. (When a truck is completely stuck in sand or mud the rear wheels have to be dug out and jacked up and planks and rope mats inserted underneath.) Sufficient petrol must be carried or sent on ahead to depots in the desert to

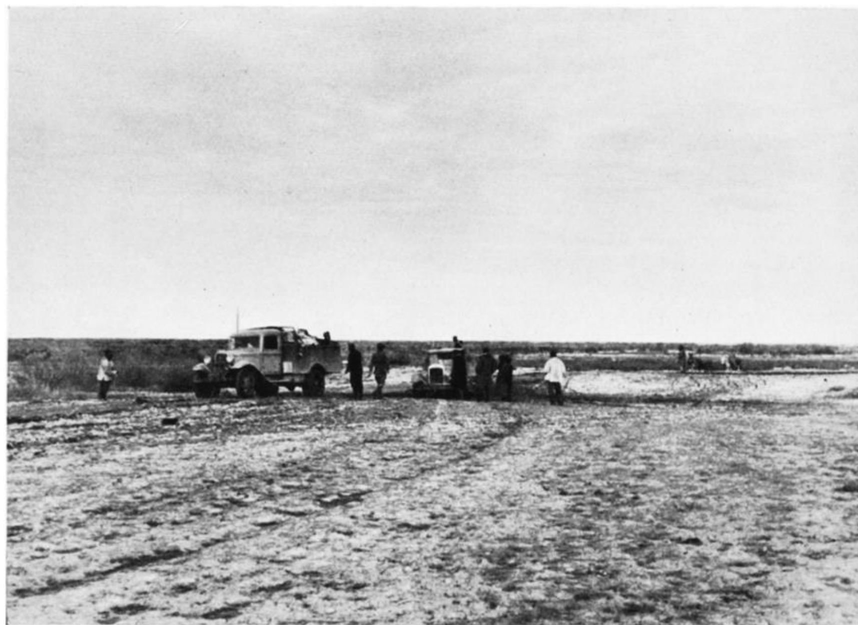
Loading up at Pai-ling Miao. Monastery in the background



The eastern Gobi. Bandin Tologoi



Wayen Torrai. Chinese Government wireless station



The Dzungarian steppe, approaching Urumchi

enable one to cover the 1200 miles to Hami, where the first supplies of Russian petrol are obtainable, but at present only through official sources. Estimates of the amount of petrol required should be based on a minimum average of 4 to 5 miles per gallon for a loaded truck in the desert, allowing for the necessary low-gear work in sand and bad ground.

The motor vehicles at present in use on the Sui-yuan to Hami run across the Gobi are mostly Ford V8 3-ton trucks, which have proved themselves to be strong, fast, powerful, and reliable, and have the advantage of being familiar to the Chinese and Mongols who drive the route. Only the strongest machines will stand the strain of Gobi travel—and the nature of some of the ground that has to be crossed must be seen to be believed. The Citroën tractors of the Hardt expedition were, according to Mongol reports of their work which I heard, good in sand but bad on rocky ground and too slow for the purposes required. In Chinese Turkestan, *i.e.* from Hami to Urumchi and from Urumchi to Kashgar and the Soviet frontier, only Russian *Amo* trucks are in use, motor transportation being monopolized by the local Government, who have acquired a large fleet of these *Amo* trucks from the U.S.S.R. They are strong and carry heavy loads, but seem underpowered as compared with the Ford V8 trucks for the nature of the work they have to perform.

The necessary native equipment and supplies for crossing the Gobi can best be obtained in Kwei-hwa-ch'eng (Sui-yuan), including Mongol tents, which, felt-lined for the winter, are more suitable for this kind of travel than any other type of foreign or native tent. The Sui-yuan sheep-skins are amongst the best in Asia, and we were grateful when crossing the Pamir in the depths of the winter for our Mongolian sheepskin sleeping-bags and robes, which were superior to anything of the kind obtainable at Kashgar or on the Indian frontier. All food supplies, except meat, must be carried sufficient to reach Hami. Sheep can be purchased *en route*, and antelope, sand-grouse, duck, and an occasional bustard, can be shot in the desert.

Wells are met with every 20 to 30 miles along the camel trails, but it is not easy to find them without a competent guide who knows the road.

Fuel is obtainable in most parts of the desert, in the form of dead tamarisk and poplar wood, which burns very well, better than the *argols* (dried cattle dung) of the steppe country. Apart from fuel and water there is nothing at most of the halts but the bare well, unless one happens on the *yurts* of a depot of the *Sin-Sui* Company or of a Chinese trading post.

Where possible it is best to follow the old camel trails, which are firmer and better going than the rest of the desert. Over long stretches of the Gobi the surface is gravel over sand, and once off the camel trails the heavy trucks break through the top surface and have to plough for hour after hour through the sand on low gear. The worst part of the road from Sui-yuan to Hami, for sand and heavy going, is the first half, to the Etsin Gol. Thereafter the going, though rocky and stony in places, is better. Some of the worst going is across the sandy beds of dry rivers, and some of the best on the smooth firm surface of dry lake bottoms. The latter sometimes furnish a virgin motor road as smooth as tarmac along which one can travel at high speed for miles on end.

The different seasons of the year all have their disadvantages for crossing the Gobi by motor: in winter the extreme cold, in the spring the wind and

sand storms, in summer the heat of the sun, and in the autumn, in Inner Mongolia, the rain, which may make the softer parts of the desert impassable for a time. Probably the early winter months, November and December, are the best in spite of the cold; or the early summer, May and June.

In Sinkiang, from Hami to Urumchi and Urumchi to Kashgar, the motor route follows for most of the way the old cart road, which affords on the whole easier going than the camel trails of the Gobi. The carts of Turkestan have a specially broad gauge, which facilitates motor traffic, since motor trucks can generally pass wherever the carts go; whereas in North China a cart track will always sooner or later become too narrow for a motor vehicle. The Sinkiang roads are however often very bad in the oasis country, owing to the many streams and irrigation channels that have to be crossed.

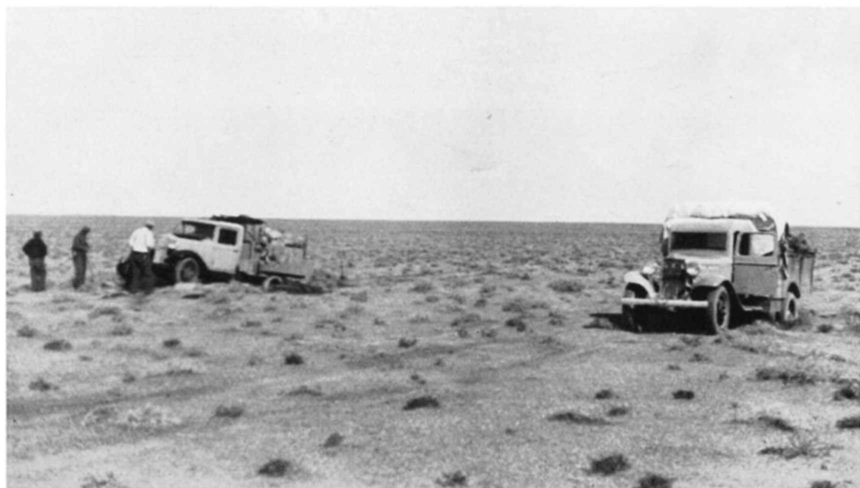
The late autumn, or early winter, is probably the best season for traversing Chinese Turkestan by motor, and the spring thaw time the worst. In the summer also the rivers and streams and irrigated ground are troublesome. In mid-winter the country north of the T'ien Shan is snow-bound and too cold for motor travel.

Serais, or house accommodation of some kind, are everywhere available in Sinkiang, and from Hami on it is unnecessary to carry tents or large supplies of food.

It took me thirty-eight travelling days to cover the 2550 miles by motor truck from Sui-yuan to Kashgar, but I encountered various mishaps on the earlier part of the journey. With proper organization and preparation it should be possible to do the journey by motor truck in a month, as compared with four to six months by camel caravan or cart.

My transport consisted of two Ford trucks, one new and one old, the latter having already done some thousands of miles of expedition work with Dr. Sven Hedin the year before. The old truck suffered several mechanical breakdowns and had eventually to be abandoned 500 miles short of Kashgar; the new one reached the end of the journey in perfect condition, and had the distinction of being the first motor vehicle to be driven through from the Chinese border to Kashgar. The moral is that only new machinery is good enough to stand up to the strain of Gobi travel. My native staff of six included two Mongol driver mechanics who had been with Dr. Hedin on his last journey. One of these was the Mongol Serat, whose invaluable services I obtained through Mr. George Söderbom of Kwei-hwa-ch'eng. Serat was my right-hand man throughout the journey. Starting as a youth in the service of Mr. Larson, he had spent his life wandering across the length and breadth of Inner and Outer Mongolia. Subsequently he made two expeditions with Dr. Hedin to Sinkiang, and he can now probably claim to know more than any one else about the routes and practical details of motor travel in Mongolia and Chinese Turkestan. The adventures of Serat and the other members of the Sven Hedin Expedition of 1934–35 are graphically described in Dr. Hedin's recently published book, 'Big Horse's Flight.'

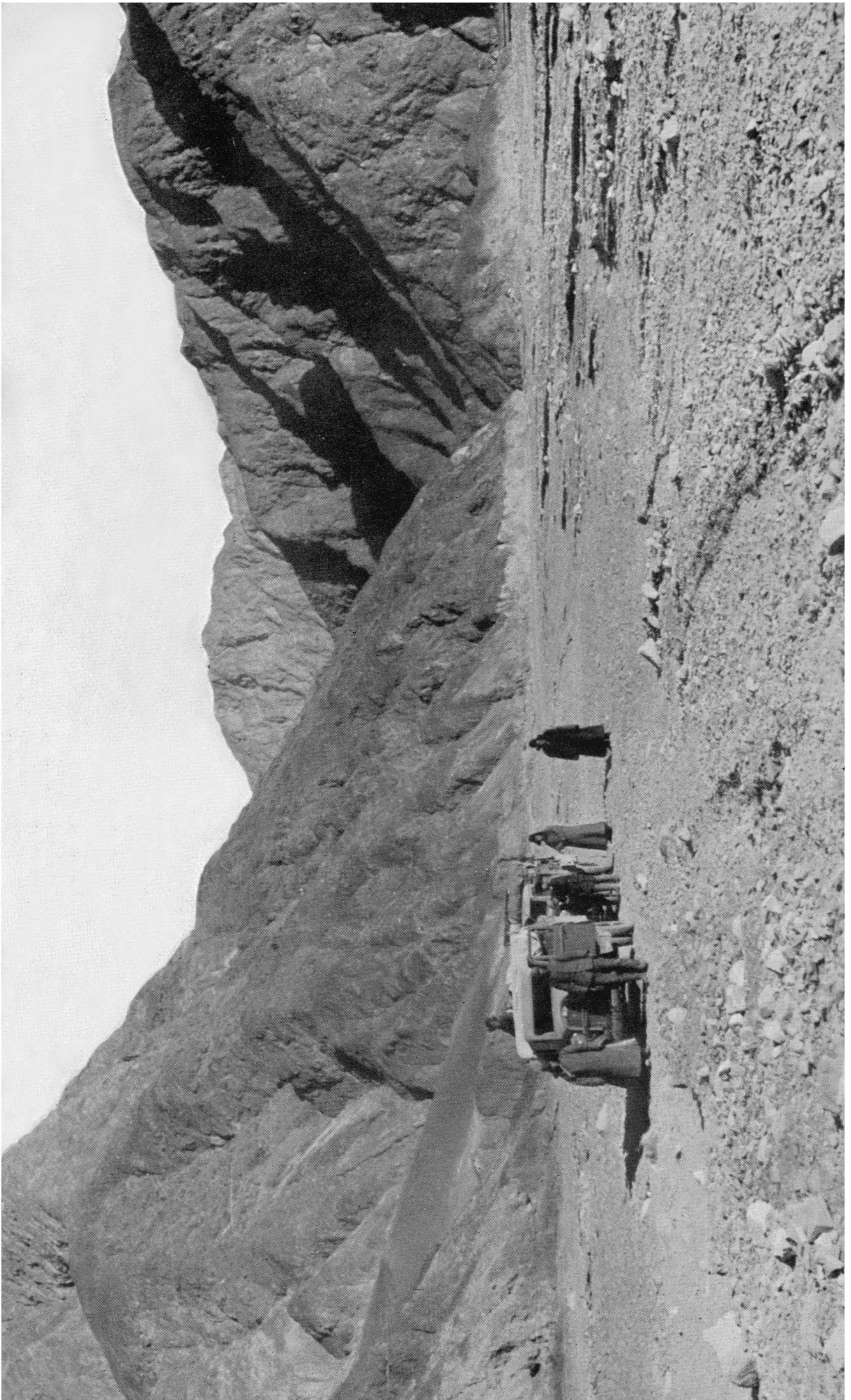
We started in the latter part of September from Sui-yuan (Kwei-hwa-ch'eng), which from time immemorial has served as the terminus on the Chinese border of the Central Asian caravan trade. Sui-yuan can be reached by the Peking–Sui-yuan railway in twenty-four hours or so from Peking, thus avoiding the



Soft ground in the desert near Hoyer Amatu

Good going across the T'ien Shan

Working on the road in the Toksun gorge



difficult Nankou pass and 300 to 400 miles of rough going along the Inner Mongolian border. Starting the motor journey from Sui-yuan, one ascends by a stony cart track through the mountains leading up to the grasslands of the Mongolian plateau. Once on the steppes the going improves and a day's run across grassy prairies brings one to Pai-ling Miao (Mongol Batur Halak), one of the biggest monasteries in Mongolia. In 1935 a village of *yurts* alongside the monastery housed the newly established Government of Autonomous Inner Mongolia.

From Pai-ling Miao the trail continues across the Mongolian steppe for 160 miles to Uni-Ussu ("Cow Water"). The going is good on this stretch, except for some miles of heavy sand in the Yang-ch'ang-tzu Kou ("Sheep Gut Valley"). At Uni-Ussu begins the crossing of the Gobi, which, except for the Etsin Gol country half-way, extends for near 1000 miles to Hami, the first big oasis in Chinese Turkestan. It is therefore also at Uni-Ussu that the difficulties of desert travel really begin. The main camel trail here turns south to Shan-tan Miao, while the new motor track continues west along the Outer Mongolian border. Some 70 miles west of Uni-Ussu, near the well of Bayen Unter, the track is crossed by a line of sandhills impassable to motor traffic stretching across one's front into Outer Mongolia. These sands can be detoured either by making a dash to the north through the forbidden land of Outer Mongolia (this has been done but is *not* recommended), or by turning south and following along the dry bed of the Meringen Gol.

Beyond Bayen Unter the motor track continues west-north-west across a gravel Gobi plateau. This is probably good going in dry weather, but we were unfortunate enough to be travelling across it during the autumn rains, which made the surface of the desert too soft to bear the weight of the trucks. Rain and waterlogged ground are not the kind of trouble one expects to meet with in the Gobi; but in this neighbourhood towards the end of September it rained continuously for nearly twenty-four hours, and, after a day's delay in camp waiting for the desert to dry, we spent nearly twelve hours in covering 20 odd miles. All the time the twin peaks marking the well of Hoyer Amatu were in sight, but it seemed as though we should never reach them, when finally, as night was falling, one of the trucks sank up to its back axle in the bed of a sandy stream. Again we had to camp where we had stuck, and it was not until the next day, after struggling across some higher ground and picking our way laboriously through rocks and sandhills, that we reached Hoyer Amatu, a well and the *yurts* of a Chinese trading post lying in an immense plain bounded on the north by a range of low mountains on the Outer Mongolian border, here about 10 to 15 miles off.

For the next 100 miles, from Hoyer Amatu to Bandin Tologoi, we continued to have trouble with sand and soft ground. Twenty-five miles out we passed Abter well, where we were obliged to leave the camel trail we had been following on account of the sand and turn north towards the Outer Mongolian border. After various adventures and misfortunes, including a serious mechanical breakdown involving a further delay of twenty-four hours, we reached and camped near some lagoons 50 miles from Hoyer Amatu and a few miles north of the well of Yingen, which we had failed to find. Yingen well lies at the meeting point of the borders of Outer Mongolia, Sui-yuan, and

Entrance to the Toksun gorge

Ning-hsia, and, so far as I could make out, we were here actually camped in Outer Mongolian territory.

The next day we covered the remaining 50 miles to Bandin Tologoi, where there is quite a settlement of *yurts* belonging to local Mongols and Chinese traders. Here our route crossed a camel trail from Urga to Kansu, which in 1927 was one of the main lines of communication between the Chinese revolutionary forces and the U.S.S.R.

This region of the Gobi consists of immense plains of gravelly sand sparsely dotted with tamarisk bushes, all tinder dry and invaluable for fuel, and interspersed with the flat sandy beds of dry rivers, which are usually troublesome to cross. Most of the way the view to the north is bounded by a low range of mountains marking the Outer Mongolian border and the northern edge of the Gobi desert. From what I heard the camel trails to the north of these hills in Outer Mongolia should lie across grassy steppe country and afford much better going for motor traffic bound from China to Turkestan. Unfortunately the local political situation prevents their being used.

My map of the motor route across the Gobi is decorated with numerous place-names, but most of these are only bare wells, which it would be impossible to find without a guide who knows their whereabouts.

Beyond Bandin Tologoi, in spite of many bad patches of sand, we found the going better, with some long smooth stretches of firm gravel where we travelled at a good pace. The trail, after crossing a broad sandy depression, runs through range after range of low Gobi hills, often grotesquely shaped and coloured red, yellow, green, and blue. Finally one emerges from the last range of hills to reach, 150 odd miles from Bandin Tologoi, the poplar belt marking the eastern edge of the oasis of the Etsin Gol. Coming from the east trees and pasture are first reached at the well of Wayen Torrai, where the Chinese Government have recently established a small wireless station in a Mongol *yurt*.

The Etsin Gol is known higher up to the Chinese as the Hwei Ho (Black River), where it issues from the mountains of the Kokonor and waters the oases of Western Kansu before flowing north into the desert. Beyond the township of Mao-mu it splits up into two or three main and other subsidiary channels and flows north for 200 miles or so to end in the twin salt lakes of Gashun Nor and Sogo Nor on the border of Outer Mongolia. This is the Etsin Gol oasis, a long narrow strip from 30 to 50 miles across, a region of desert poplars, tamarisks and thin reedy grass, inhabited by a tribe of Torgut Mongols and surrounded by the desolation of the Gobi. In the summer most of the river water is used by the farmers in Kansu for irrigation purposes and in the winter the streams are frozen. In both these conditions it is possible, if one knows the way through the sandhills, to drive motor trucks across the various channels of the river. At the time we made our journey, in the autumn months however, motor traffic had to make the long detour round the twin lakes to the north. This involves an extra 100 miles as compared with the direct route. It is a hard run through heavy sand and a terribly desolate region round the two salt lakes and along the base of the range marking the Outer Mongolian border. Then one strikes another camel trail running south from Urga to Kansu and Tibet, which affords good going for the rest of the way south to

Ulan-chonchi, a remote little tax station on the western edge of the Etsin Gol oasis.

From Ulan-chonchi it is a run of 300 miles across the Black Gobi to the Sinkiang border. The going is rocky and mountainous much of the way, but there is less heavy sand than on the stretch east of the Etsin Gol. This region of the Western Gobi gives an impression of extreme emptiness and desolation. It is practically uninhabited, and over considerable stretches there is no scrap of vegetation, even the desert shrubs and tamarisks giving out. There are *yurts* of Chinese traders at only two points, Shih-pan Ching and Kung Po Ch'uan. From Ulan-chonchi to Shih-pan Ching we found the going fairly good, at first across a vast plain and then through low Gobi hills. Over a distance of 90 miles on this stretch there are no wells, involving great hardship for the camel caravans but, given ordinary precautions, none for the traveller by motor truck. For, though we were on occasion forced by misadventure to camp where there were no wells, we always carried an ample supply of water in empty petrol drums.

Beyond Shih-pan Ching there is some rather difficult ground through a range of mountains near the top of which lies Yeh Ma Ching-tzu ("The Well of the Wild Horse"). This well lies just off the route, being inaccessible to motor traffic owing to the narrow pass.

About 200 miles from the Etsin Gol we reached Kung Po Ch'uan. The neighbourhood is marked by the ruins of a fortress on a nearby hill-top, an unusual sight in this empty land. These are the ruins of the stronghold of the outlaw lama chief, a Russian Mongol, who established himself in this remote region in the early nineteen-twenties, when Mongolia was in a state of turmoil. For some years he levied tribute on the passing caravans and surrounding countryside, until he was eventually killed and his followers dispersed by an expedition sent by the Outer Mongol and Russian authorities. Versions of this singular story, which is still told and re-told round the camp fires of the Gobi caravans as they pass the neighbourhood, will be found in the books of Mr. Lattimore and Mr. Haslund.

The Western Gobi is a jumble of mountains, and it is not easy to distinguish the continuity of the different ranges. One of the more distinctive features is the Ma Tsung Shan range, which runs much of the way along the southern horizon on the left hand as one travels west. Beyond these mountains lies the old Kansu cart road across the Gobi.

From Kung Po Ch'uan, where one first meets with sweet water springs (*Ch'uan-tzu*) in place of the often bitter Gobi wells (*Ching-tzu*), the trail ascends through the mountains to the Sinkiang border. This is a remote and desolate region, utterly empty save for the wild ass and antelope. The Sinkiang border is reached at Ming Shui ("Clear Water"), which figures prominently on the map but comprises actually only a ruined hut and well in uninhabited desert mountains. Near by are some ruined forts and towers of great antiquity marking the Mongolian–Turkestan frontier.

The Ming Shui pass (6700 feet) marks the highest point on the Gobi crossing, and one descends across an immense slope of hard gravel, good going for the trucks, into the desert plains of Chinese Turkestan. To one's front rises the eastern end of the T'ien Shan, the snow-capped Karlik Tagh,

a fine view which impresses itself all the more on the memory because it marks the end of the weary Gobi crossing. Rounding the southern base of the Karlik Tagh and passing the outlying oasis of Miao-erh-Ku, where Turki peasants are first met with, we reached Hami, the eastern gateway to Sinkiang. Here the traveller finds himself in a new country, China and Mongolia are left behind, and the people, language, scenery and buildings are those of Eastern Turkestan.

Hami lies close under the southern face of the T'ien Shan, and the road to Urumchi (368 miles) runs north-west and crosses the main range by the Ta-shih-t'ou gap between the Karlik Tagh and the Bogdo Ula peaks. The pass, 5300 feet, is relatively easy for motor traffic and the going is good most of the way on the long descent across the plains of Dzungaria on the other side. We were now in Northern Sinkiang, known to the Chinese as *T'ien Shan Pei Lu* ("the Circuit North of the T'ien Shan"), a cold bleak land resembling Mongolia and Siberia rather than Turkestan. The first large city to be reached is Ku-ch'eng, a Chinese trading centre and the terminus of the camel caravan route from China. From Ku-ch'eng to Urumchi, 126 miles, the road is generally bad, as one passes through a series of agricultural oases watered by streams and irrigation channels from the T'ien Shan. The countryside is full of game, especially partridges and hares. All the way the snow peaks of Bogdo Ula are in full view, as one circles round them to reach Urumchi.

This road which we followed from Hami is the summer motor route to the Provincial Capital. In the winter, from November on, it is snow-bound and motor traffic follows the road *via* Turfan south of the T'ien Shan.

Urumchi, known to the Chinese as Ti-hwa, is too well known to call for much description. It is the capital and administrative centre of Sinkiang and comprises three towns adjoining one another, the Chinese city (seat of the Provincial Government), the Moslem city (Turki and Tartar bazaars), and the Russian quarter. It lies close under the T'ien Shan, on their northern face, in a basin-like break in the main range, backed by the snows of Bogdo Ula and nearly surrounded by hills, with an opening to the north, where the Urumchi river flows out on to the steppes of Dzungaria to end in a vast marsh farther north. The climate is severe, resembling that of Harbin in Manchuria. Before we left, in the middle of November, the countryside was already under snow and the thermometer had fallen to zero Fahrenheit at night time. There is not much to be said for Urumchi as a place of residence, but it is a centre of the first importance in Central Asian politics and history.

From Urumchi to Kashgar, about 950 miles, the motor route follows the old cart road. We travelled *via* Turfan, involving a detour of 25 miles, in order to visit this important and interesting oasis, famous for its situation some hundreds of feet below sea-level, its archaeological remains, its seedless raisins and other fruits, and its terrific summer heat. In mid-November however the climate was pleasant enough, with some degrees of frost at night. The road from Urumchi across the Ta-pan pass in the T'ien Shan presents no special difficulties for motor traffic and we were glad to be back in the relative warmth of the country south of the T'ien Shan.

The main south road (*T'ien Shan Nan Lu*) is rejoined at Toksun, an oasis similar to, but smaller than, Turfan. A few miles farther on one has to pass

through the famous, or rather infamous, Toksun Gorge, the most difficult and dangerous place for motor traffic between Peking and Kashgar. Nor can these gorges be avoided, as this route, the old Imperial cart road, is the only possible one for motor traffic between the north and the south of Chinese Turkestan. The road traverses a mountain range by a narrow gorge and in two places ascends very steeply over a sort of rock avalanche and between huge boulders. This place has been the grave of many motor vehicles, and we lost one of our trucks on it. It is to be hoped, for the sake of future travellers, that the Provincial Government will turn their attention to blasting a proper passage through the rocks. The present condition of the road through the Toksun Gorge is evidently much the same as it was fifty years ago, since the description given by Captain Younghusband in 'The Heart of a Continent' might have been written to-day.

After our adventures in the Toksun mountains we spent the night in the miserable hamlet of Kumush on the farther side of the pass, where we had to abandon one of our trucks which had broken its differential gear on the ascent over the rocks in the gorge. We twice had to take down the back axle of a truck in the desert, but on this occasion had no spare part to replace the damaged gear. On the following day we covered the remaining 100 miles of relatively good going to Karashar, where one is again in a Mongolian atmosphere, as this is the centre of the Torgut Mongols of Sinkiang, who occupy the pastures of the neighbouring T'ien Shan ranges. Here we encountered the second major obstacle of the Urumchi–Kashgar road, the crossing of the Karashar river flowing down from the mountains into the Bagrach Kol near by. In the summer the Karashar river can be crossed by a ferry boat taking camels, carts and motor trucks, and in mid-winter it is frozen and motor traffic can cross on the ice. We were unfortunate enough to arrive just at the moment when the ice had started to pack, so that the ferry boat was frozen in, and, though foot traffic was already crossing on the frozen surface, it was not expected that the ice would be strong enough to bear the weight of the motor trucks for another two or three weeks. Eventually, with the assistance of a party of Russians, who were interested in getting their trucks across from the other side, we succeeded after two days' work in breaking a passage for the ferry boat through the ice and effecting a difficult and rather dangerous crossing.

From Karashar to Kashgar, 684 miles, we met with no further serious difficulties, though the road is bad and sandy in places and there is one big river, at Aksu, to be crossed on the way. We crossed the Aksu river by a very inadequate bridge built for the cart traffic, but a ferry near by affords an alternative and probably safer method of crossing. The road passes through the chief towns and oases of Southern Sinkiang, such as Korla, Kuchar, Aksu, and Maralbashi, which go to make up the *Nan Lu* ("South Road" or "Southern Circuit") and constitute the heart of Chinese Turkestan. The cities, packed on bazaar days with peasants from the surrounding oases, are purely Turki in appearance; and a Chinese face is nowadays as rare amongst these Turkish crowds as that of a foreigner in the interior of China. For long stretches on both sides of Maralbashi the sand is very bad, involving many hours of low-gear work and frequent recourse to the spade. This neighbourhood is the

edge of the great central desert of Chinese Turkestan where the atmosphere is usually shrouded in dust haze. A thin white dust lies ankle and knee deep on the track which winds through ghostly forests of dead poplars and tamarisks. This white dust is not however a serious impediment to motor traffic, and it is only when one reaches stretches of real sand that the trouble begins.

We had left Urumchi on November 14, but, owing to the delay of some days at Karashar, we did not reach Kashgar until November 29. The latter part of the journey was a race against time, as every day's delay increased the difficulties of the winter journey across the Pamir and Karakoram to India. I was eventually able to leave Kashgar on December 9 and reached Gilgit a month later. This stage of the journey, 400 odd miles across the mountain barrier separating the upper waters of the Indus from the plains of Turkestan, can of course only be done by pack animal, the farthest point possible for motor traffic being the foot of the hills 30 miles or so from Kashgar. The snow on the Mintaka Pass (15,450 feet) on the frontier was rather deep, but we crossed without incident after transferring our loads from our own ponies to some yak furnished by the local Kirghiz. On the whole the winter journey across the Pamir and Karakoram presented no special difficulty, apart from the cold. At one of our camps on the Pamir we recorded more than 20° below zero Fahrenheit at night time. The cold makes itself felt all the more owing to the constant high winds and scanty supply of fuel, *argols* and brushwood, available on the Pamir. It is a relief to cross the pass and reach the comfort of the Mir of Hunza's rest-houses and their abundant supply of firewood. On the other hand the winter route *via* the Ghez defile from Kashgar to the frontier affords wonderful views of the Kungur and Muztagh Ata ranges, both over 24,000 feet high, towering over the Chinese Pamir.

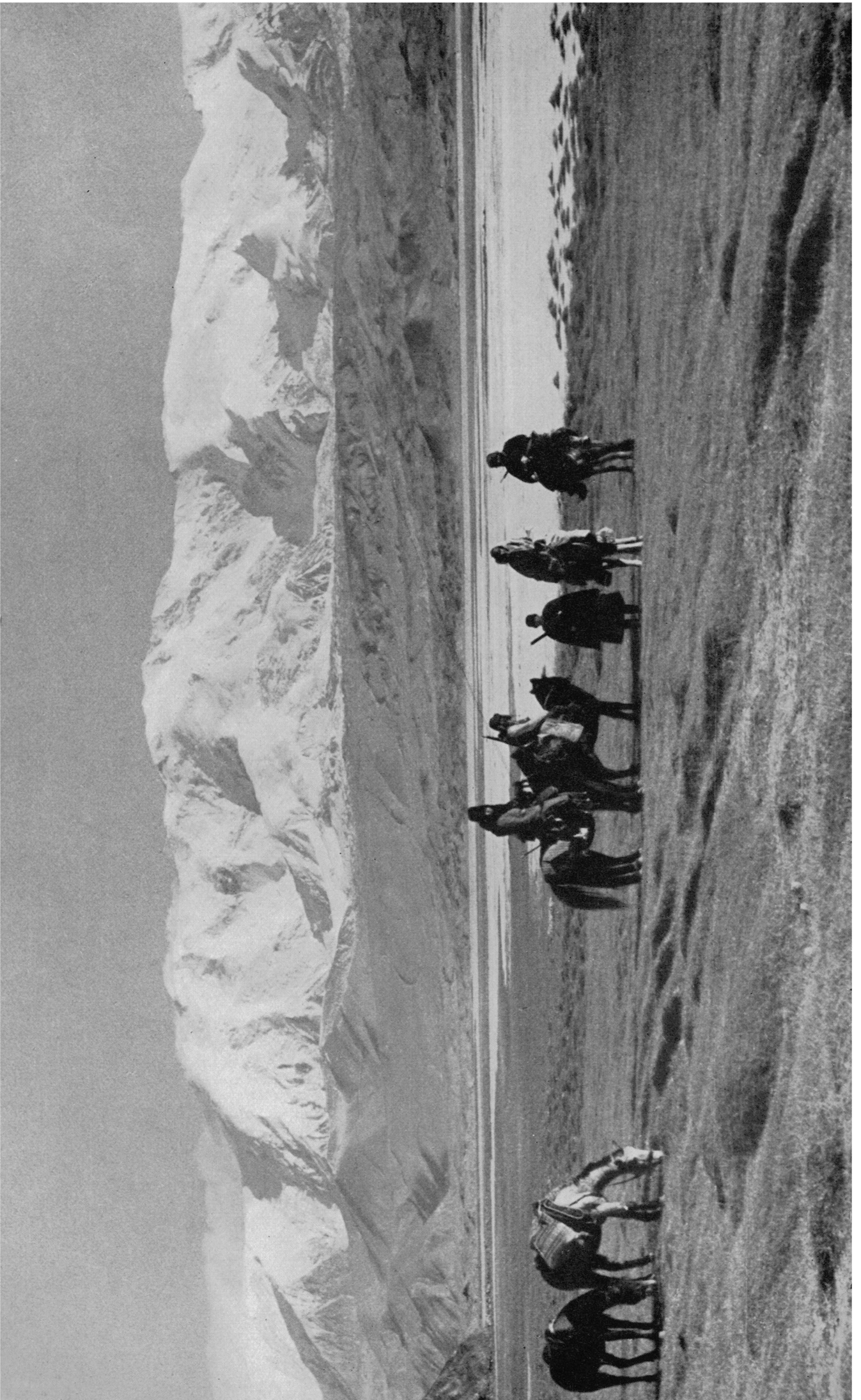
Arriving in Gilgit early in January we found, as was to be expected, that it was impossible to get through to Srinagar owing to the snow on the Burzil Pass. My Chinese and Mongol staff were sent out through Chitral, but I myself was saved this further long tramp through the snow by the courtesy of the Government of India, who fetched me down from Gilgit by air. This was, I believe, the first time that an aeroplane had visited Gilgit during the winter, and on the first attempt the machine, an Avro X, piloted by Flight-Lieut. Jackson, flew into bad weather and had to turn back to Rawalpindi owing to ice forming on the wings. The second attempt, made the next day, was successful; and on the following day, January 16, we flew from Gilgit to Delhi in perfect weather. We crossed the Himalaya at 15,500 feet, following most of the way down the gorges of the Indus with wonderful views over Rakaposhi, Haramosh, Nanga Parbat, and the peaks and valleys of Kohistan. The flight from Gilgit to Rawalpindi took under two and a half hours, as compared with the fourteen days or so occupied by the same journey by road.

Note on the map

The map is based on a compass traverse by the author. The eastern portion is adjusted to the position of Sui-yuan (Kwei-hwa-ch'eng) on the War Office map of Mongolia (G.S.G.S. No. 2957. Scale 1/4M) and to Sir Aurel Stein's position of Gashun Nor (Serial No. 44 of "Chinese Turkistan and Kansu"

Ferrying through the ice on the Karashar river

Village of Kuchar



from surveys made in 1900–1, 1906–8, 1913–15. Scale 1:500,000). From Gashun Nor to the Mintaka Pass the traverse is adjusted to Sir Aurel Stein's observations and the position of Ti-hwa (Urumchi) has been taken from the War Office map (G.S.G.S. No. 2957. Scale 1/4M) in order to join the traverse between Ku-ch'eng and Turfan. The revision of certain observations in the neighbourhood of Korla noted in the "Memoir on maps of Chinese Turkistan and Kansu" (Trigonometrical Survey Office, Dehra Dun, 1923) has been used. Surrounding detail has been filled in from the War Office 1/4M maps and use has been made of the 1/2M map of Kashmir in the Southern Asia Series of the Survey of India, and of a sketch-map of the Lop Nor in 'Across the Gobi Desert,' by Sven Hedin.

The spelling of names is that preferred by the author and is not always in accordance with the decisions of the P.C.G.N.—Ed. *G.J.*

DISCUSSION

Before the paper the President (Professor Henry Balfour) said: We are fortunate in having persuaded Sir Eric Teichman to come and talk to us to-night about the motor route between Peking and Kashgar. It is a matter of something over 2500 miles. I am sure you are anxious to hear what he has to say rather than any remarks of mine, and so I will without further preamble ask Sir Eric Teichman to be good enough to give us his lecture.

Sir Eric Teichman then read the paper printed above, and a discussion followed.

The President: I understand that Mr. Peter Fleming is in the hall, and I will ask him to be kind enough to come and speak to us on a country which he also knows well.

Mr. Peter Fleming: It strikes me that Sir Eric Teichman has made too little of a song and dance about a very considerable journey. He took it all—in his lecture as no doubt on the road—so very much in his stride that I think somebody ought to underline the very great powers of endurance which are needed to cross the Karakoram in December and January on ponies, and the equally great powers of patience and diplomacy which are needed to overcome the various obstacles and delays which you meet with on the motor road. A lorry, I am sure, is infinitely more unsatisfactory than pack animals, and I should say that the psychological strain, the perpetual anxiety and suspense, imposed on the traveller is very much greater than the far rarer annoyances sustained by other travellers who, because they cannot, do not rely on internal combustion. Apart from that, I do not think I have anything to add to an exceedingly interesting lecture, which modestly recorded a feat of which men half Sir Eric's age would have good reason to be proud.

The President: I do not think Sir Francis Younghusband is in the hall, and I am sorry to say that Mr. Lattimore is not with us. We were expecting him but, very unluckily, he has been prevented at the last moment.

I would like to say what a pleasure it has been to all of us to hear this account of what really was quite an adventurous journey. Sir Eric Teichman has been attached to the British Embassy in China for a great many years, and it is perfectly clear that he has made the most of his opportunities. He has travelled very widely indeed, both in North-Eastern China and Tibet, and, as you have seen to-night, right across from east to west, linking up the two extremes of the huge area which is administered by China.

It has been obvious, I think, that what Sir Eric was dealing with, in the main, is a route and not a road. His pictures brought home to us very admirably that

Looking across the Little Kara Kol lake towards the Kungur range

U. S. S. R. IN ASIA
Issik Kol
Ili
Tekes
Narin
Khan Tengri
23620
Aksu (old)
(Wen-Su Hsien)
Aksu (new)
(A-Ko-Su Hsien)
Taushkan
Jam
Kara-Yulgun
Yakka-arik
Inn
Pai
Kizil
Sairam
Tarim
Ak Su
villages
Old Chilan
(empty town)
Yakka-Kuduk
(Shih-T'ai)
Chadir Kul
Charbagh
Tumchuk
(Chu-T'ai)
Churga
Tungan Mazar
Urdi-Klik
Yaman-yar
Kashgar (old)
(Shu-fu Hsien)
Kashgar (new)
(Yangi-shar)
(Shu-lo Hsien)
Tokuzak
Baraktai
Tashmalik
Faizabad
Yangi-Abad
Kashgar
Maralbashi
(Pa-chu Hsien)
3690
Yarkand
Bulun Kol
gorges
Ghez
Tokai
Kungur
25146
Kara Su Camp
Muztagh Ata
24388
Tagarma
Tash Kurghan
Pamirs
AFGHANISTAN
Yurgul Camp
Dafdar
Paik
Mintaka P.
15450
Hunza
Rakaposhi
25550
Gilgit
Indus
Nanga Parbat
26620
Burzil Pass
13775
Srinagar
Shyok
Khotan
Keriya
Niya
T A K L A M A
K A R A K O R A M
K U N L
K A S H M I R
T I E N
S I N K
75°
80°
40°
35°

D Z U N G A R I A

Steppe

85°

90°

Kash

Kunges

Ti-hwa (Urumchi)

Kumutt

2500

Inn

Tsai-o Pu

Ta-pan Ch'eng

Inn

Bogdo Ula

Fu-K'ang Hsien

Tzu-ni Ch'uan-tzu

San-t'ai

Fuyuan Hsien

Ku-ch'eng (Chi-tai Hsien)

2010

1437

Muli Ho (ruined stage)

(ruined stage) 5300

Ta-shih-t'ou (ruined stage)

Ch'i-Ku Ching-tzu Fort ruin

The-Ku-lu Chuan

Barkul (Pa-li-Kun) (Chen-hsi)

1310

I-wan Chuan ruin

Liao-tun

San-tao-ling

San Pu

Erh Pu

Tou Pu

Hami (Kumul) 2500

1195

I-Ko-shu

Miao-erh-Ku oasis

gravel plain

Karlik Tagh

S H A N

San-Ko'chuan-tzu

1677

-80

Winter motor route to Ti-hwa

Turfan (Tu-lu-fan)

Shanshan

1707

Toksun -140

Arghai Bulak

5720

Desert and Oases

Kizil

Sairam

3610

2070

Yakka-arik

Kuchar (Ku-che)

Chulabad

Yangi-abad

Bugur (Lun-tai Hsien)

Chadir

Yangi-hissar

Charchi

Ishma

Karashar (Yen-chi Hsien) 3470

1859

Ushak Tal (Ushtala)

Inn

Kumush

Tim

3080

Korla (Ku-erh-lei)

Bagrach Kol

Kuruk Tagh

Konche

SINKIANG

KANSU

K I A N G

Lop Nor

salt encrusted

M A K A N

Charchan

Charkhlik

A L T I N T A G H

Charchan

90°

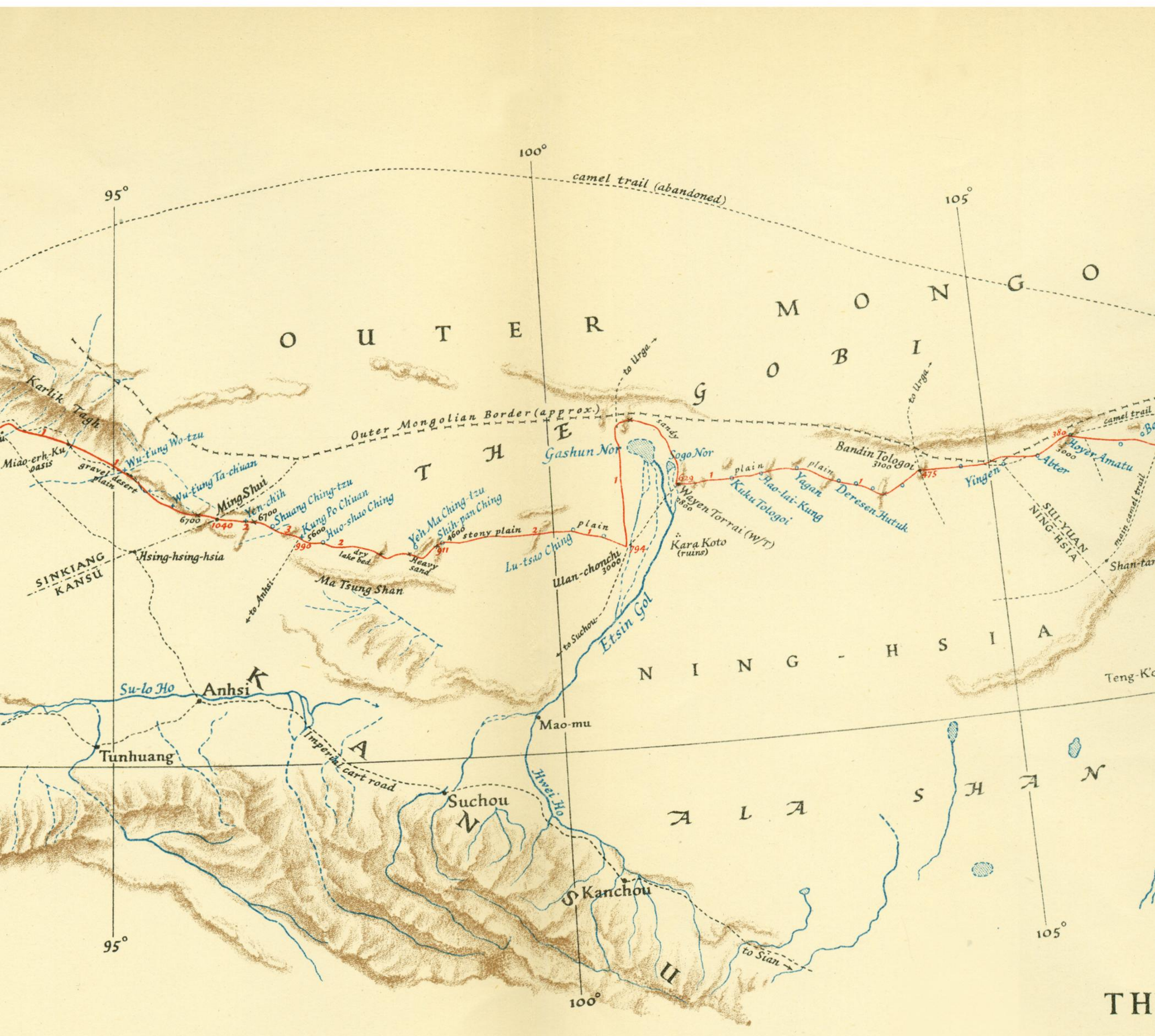
Niya

A L

U N

85°

Published by the Roya


camel trail (abandoned)
OUTER MONGO
THE GOBI
Outer Mongolian Border (approx.)
Karlik Tagh
Wu-tung Wo-tzu
Miao-erh-Ku oasis
Wu-tung Ta-chuan
Ming Shui
Yen-chih
Shuang Ching-tzu
Kung Po Ch'uan
Huo-shao Ching
Yeh Ma Ching-tzu
Shih-pan Ching
stony plain
Lu-tsao Ching
Gashun Nor
Sogo Nor
Wayen Torrai (W/T)
Kuku Tologoi
Hao-lai-Kung
Yagan
Deresen Hutuk
Bandin Tologoi
Yingen
Abter
Hoyer Amatu
Kara Koto (ruins)
Ulan-chonchi
SINKIANG
KANSU
Hsing-hsing-hsia
Ma Tsung Shan
to Anhsi
to Suchou
to Urga
Etsin Gol
SUI-YUAN
NING-HSIA
main camel trail
Shan-tar
NING-HSIA
ALA SHAN
Teng-K'o
Su-lo Ho
Anhsi
Tunhuang
Imperial cart road
Mao-mu
Suchou
Hwei Ho
Kanchou
KANSU
to Sian
95°
100°
105°
TH
Route
Distan
Th
lished by the Royal Geographical Society

O L I A

S t e p p e

Uni-Ussu 5000

Bayen Unter

Hosatu

sandy plain

Hoyer Amatu

Sung-tao-ling

Hsiao-chiuan

edge of plateau

to Pao-t'ou

main camel trail

camel trail

Shan-tan Miao

Yang-chang-tzu Kou (sandy valley with Chinese farms)

Pai-ling Miao (Batur Halak) 4300

Chao Ho 5000

Ko-cheng (Wu-ch'uan)

Sui-yuan (Kwei-hwa-cheng)

Pao-t'ou

Hwang Ho

Ma Ho

to Urga

motor route

Kalgan

Railway

Tatung

Sangkan Ho

Hun Ho

Peking (Peiping)

Teng-K'ou

S U I - Y U A N

O R D O S

110°

115°

40°

THE MOTOR ROUTE FROM PEKING TO KASHGAR

To accompany the paper by Sir Eric Teichman, K.C.M.G., C.I.E.

Scale 1: 6,000,000

Route followed by Sir Eric Teichman's motor trucks (1 = Good road 2 = Fair 3 = Bad) 1 2 3 by pack animals
Distances in miles from Sui-yuan in red. Approximate heights in feet shown in black. Other roads and tracks
Pass.. Well.. Spring..
The spelling of names is that preferred by the author and is not always in accordance with the decisions of the P. C. G. N.
See note at end of paper for construction of map.

those who explore the routes in order to find the lines of least resistance between extremes are pioneers, and as a result of their work we see permanent roads which eventually play so great a part in the prosperity of a country. Sir Eric Teichman is to be congratulated on having done some of this work, and at any rate ascertained a possible route which does link the far extremes of Kashgar and Eastern China together. When that route develops into a made road, as undoubtedly it will with the increase of motor transport, one cannot help thinking that the administrative difficulties which confront China will begin to be very much lessened. It always seems that one of the great difficulties that China has had to contend with is means of transport and general locomotion within its vast area. Sir Eric and others who have explored the region are playing their part in bringing about what eventually will be a very great benefit to this apparently rather incoherent region.

I ask you to express your cordial thanks to Sir Eric for a most interesting lecture describing an adventurous journey, likely to lead to very important developments.

FROM THE BRAHMAPUTRA TO THE CHINDWIN: *A paper read at the Evening Meeting of the Society on 11 January 1937, by*

E. T. D. LAMBERT

ON 11 January 1926, exactly eleven years ago, the Naga Hills were last brought to the notice of this Society at a meeting by Mr. J. P. Mills, of the Indian Civil Service. In describing my journey from the Brahmaputra to the Chindwin, I am describing that part of the Naga Hills north and east of that dealt with in his paper, and I will attempt here without recapitulating too much of what Mr. Mills has said to give you some idea of the country which he was unable to visit and which it has been my good fortune to traverse.

Two series of major triangulation had been completed: In Assam up the Brahmaputra valley and in Burma up the Irrawaddy. The Geodetic Survey of India decided early last year to link these two series by a third, which would pass north-east from Assam through the Naga Hills, east across the Patkai, south-east to the Hukawng Valley and the Chindwin, and then south-west along the Irrawaddy–Chindwin watershed. Between these two great valleys of the Brahmaputra and the Chindwin lies a long range of jungle-clad mountains stretching from the Himalayas in the north to the port of Akyab on the Bay of Bengal in the south. It averages about 6000 feet in height and rises to its highest point, Saramati, at 12,200 feet. For much of its length it forms the boundary between Assam and Burma. It has not yet been completely explored, and contains some of the most primitive and warlike people in India. It has only been crossed on a very few occasions towards its northern extremity. The Naga Hills district is a long, narrow strip of this area which borders on the plains of Assam and was only taken over for administration to protect the people of the plains from the head-hunting raids of these primitive hill people. One other small area, that round the Tirap River, has also been taken over and is under the administration of the Political Officer of the Sadiya Frontier Tract. Administration in these backward tracts does not amount to as much as it does in the ordinary districts of India. The Indian Penal Code and other similar Indian laws are not in force, and the people are ruled as far as possible under their own laws and customs. They pay a small poll or house tax varying from Rs.2 to Rs.5, and in return for this Government provides an administrative officer, schools, and dispensaries. Head-hunting and human sacrifice are banned, and the people are given protection from raids from across the frontier. An attempt is made to improve the economic lot of the inhabitants.

To the north-east of the Naga Hills district the independent or Tribal Territory stretches away across the divide to the administered districts of Burma, east of the Chindwin. This great mountainous country, both administered and independent, is extremely difficult to penetrate for many reasons, not the least of them being the bad climate. The rainfall is one of the heaviest in the world. Mosquitoes, sandflies, leeches, and other pests make life extremely irksome for the greater part of the year. There are no roads, railways or canals in the area; and bridle-paths are few and far between. The only means of communication is by Naga paths, steep and narrow, leading from village to village

only and not along the valleys. So narrow are the paths that they admit only of single file, and sometimes the jungle hangs so low over them that a tall man has to stoop most of the time as he walks along. Transport therefore is difficult and only by coolie. As there is no food obtainable to feed a large party in the more inaccessible areas one has to rely on obtaining local porters to augment one's permanent force, as a coolie would normally eat the whole of his own load (60 lb.) in a fortnight. Languages, too, are an obstacle: there are so many and they are so diverse. We had ten interpreters, speaking between them fifteen different languages, in the course of our tour. The greatest obstacle of all is perhaps the suspicious nature of the Naga and his warlike habits. He is a great intriguer and will often try to get an enemy village embroiled with a Government column. One such attempt was made during the expedition, when Banfera went to Ninyu and told them we were coming to attack them. Ninyu had been concerned about fifty years ago in the cutting up of a Survey Party near their village. One other difficulty worth mentioning, perhaps, is that the rivers are fast-flowing and spanned only by narrow cane and bamboo bridges. There is often the risk of a sudden flood and an important bridge being carried away.

At the time that the Survey of India decided to operate in this area I, though nominally an officer of the Indian Police, was working as Sub-divisional Officer and Magistrate at Mokokchung, the subdivisional headquarters of the Naga Hills district. Previous to this I had been posted as Assistant Political Officer in the Tirap area. The Government of Assam, considering that it might be dangerous to allow a Survey Party to operate in the Tribal area without the assistance of an administrative officer who knew something of the country, recommended to the Government of India my appointment as Political Officer. Major G. H. Osmaston, M.C., then in charge of No. 15 Party, Survey of India, held charge of the survey work. As the area was largely independent, and each village in it a law unto itself, it was necessary that the party should have an escort to protect it from the raiding tribesmen, who desire not so much guns or silver but human heads as their booty. Major L. C. Bull, M.C., then O/C 4th Assam Rifles, was placed in command of the escort of four platoons furnished from the 3rd and 4th battalions of the Assam Rifles. The Assam Rifles is a Military Police force well acquainted with jungle warfare, which keeps the peace on the North-Eastern Frontier of India. It was necessary for the Survey work to post small parties of Survey *khalasis*, or coolies, with their rations, guard, lamps, and helios, on certain previously selected peaks. We decided therefore to move through the area in two parties. The first, the reconnaissance, would make friends with the local people, explore the route, and post the lampmen. The second party would confine itself to Survey work. All rations, consisting mainly of rice, potatoes, salt, chillies, *ghi* (cooking oil), and tea, we took with us. The only thing that we asked of the area was meat. I engaged a permanent coolie force of two hundred men in the Mokokchung Sub-division to carry the rations and kit of the escort. Recruited entirely from the Sema Nagas, the coolies were men of a tribe which had proved its worth in the past, many of them having enlisted in the labour corps in France during the Great War.

We had to move fast owing to the peculiar nature of the country. Up to the

1/2 000 000
Scale of Miles
5 0 10 20 30
Route ....
Unadministered tribal boundary

SADIYA FRONTIER TRACT
LAKHIMPUR
SIBSAGAR
NAGA HILLS
ASSAM
BURMA
HUKAWNG
Patkai
Brahmaputra
Dibrugarh
Sibsagar
Jorhat
Railway
Naginimara
Mokokchung
Ledo
Margherita
Tirap
Namchik
Outpost
Namphuk
Nawngyang
Subong
Changyak
Namsang
Bhojo
Taukok
Yansa
Longting
Sangsa
Mon
Sangnyu
Tang
Wakching
Chi
Sinyang
Yangmun
Totok
Chen
Sengha Chingui
Khimyong
Tutnyu
Phongsa
Layu
Nogna
Kothung
Noglo
Sumhak
Punyung
Telekkuk
Litu
Okhutohap
Namyung
Hepachet Hi
Mu Bum
8203
Shangke
Taqap Ga
Nathkaw
Tarung
Kachaing
Hkalak Ga
Shingbwiyang
Ningbyen
Dilli
Yangno
Nauknyo
Ranu
Pungra Bum
Yangme
Taga Hka
Gum Ga
Dalu
Nampuk
Sangpan
Chindwin
Tsamak Hka
Hinkui
Kyaukse
Singkaling Hkamti
Man Pang
Tawang
Maingkwan
Tanai
Nambyu
I
II
III
V
VI
VII
VIII
IX
X
XI
XII
XIII
XIV
XVI
94°
95°
96°
97°
27°
26°

middle of October the hills are enveloped in clouds, and there is only a very short season until the smoke haze from the jhuming operations at the beginning of March blots out the helios again. Jhuming is the process of burning down the jungle to fertilise the fields before the crops are sown. Even so, the greatest difficulty was found in establishing contact during the whole season, most of the observations having to be made by lamp in the biting cold late at night.

On October 20, zero day, the whole reconnaissance party, except for those who had gone ahead to the Tirap area to arrange a ration base for operations, assembled at the railhead at Naginimara. On the 21st, having augmented our permanent coolies with some three hundred temporary ones from nearby villages, a process we repeated the whole way, we started out on our first day's trek, Wakching, a large Konyak Naga village at 4200 feet, being our objective. (Naginimara is only 350 feet above sea-level.) Wakching is one of the most north-easterly villages of the administered Naga Hills district. Dr. Von Haimendorf, an Austrian scientist, has recently come to this village to make a study of the Konyaks, a tribe or collection of tribes of whom very little is known. The men here, though good porters, are addicted to opium, a habit which happily is steadily decreasing. The next day we descended to the Sinyang River, the boundary between the administered Naga Hills district and the independent or Tribal area. The two powerful *Angs*, or sacred chiefs, of Chui and Mon came to meet us at the river. They both control large confederacies of villages. A number of his men had accompanied the Ang of Chui to our camp, and after exchange of gifts, a *mithun* for a bottle of rum and a hank of red wool, they danced for us. They dance moving slowly forward in two circular parties, flexing the knees whilst raising the *dao* (sword) and twisting it rapidly in the half-opened hand. Chui's song told us about what they were going to do to their enemy Totok when the Survey Party had gone away, for Government had forbidden hostilities here whilst we were working in the area. The Ang of Lengha, a "son" of Chui (junior villages of confederacies are known as "sons"), was rather upset as, though his village had wrested a head from Totok, they had not been able to perform the final step, in the necessary spirit-capturing rites, of hurling a spear or firing a gun into a tree on Totok's land before Government's decree forbidding further hostilities had arrived. The idea in taking a head from another village is that you bring away some of the soul force of that village in it.

The next morning, crossing the Sinyang, we entered Tribal territory, a region which is out of bounds to the ordinary traveller, and the column took up formation. Guide, scouts, advance guard, officer, porters, baggage guard, porters, rear guard, all in single file and ready for any sudden attack. Our temporary coolies were drawn as far as possible from villages ahead, so that there might be less chance of any sudden desertion. Near Totok Chingkho, where we spent the night, was Totok Chingnyu. Here stout defences against Chui had been erected. The village is built on the edge of a long, steep cliff, some 150 feet high. Entering the village along a narrow causeway with high bamboo fences on either side, we had to be very careful of the *panjis* (pointed bamboo stakes) hidden amongst the dead bamboo leaves. One of these stakes has been known to pierce right through the leather into the foot of a booted sepoy. On the 25th, continuing south-east, we descended 1500 feet to the

Sinyang River

Crossing the Tupi River

The Ang of Sangnyu

A Yongkuk. Sadiya Frontier Tract

The Ang of Totok

Head-hunting trophies on the end of a house wall in Chen

The Ang of Yansa and two cousins

Tupi, another of the tributaries of the Yangmun, or Yangnyu, as it is sometimes called. This river is an important one in Konyak legend, as most of the tribes say that they migrated down its valley from the south. It rises to the east of Mokokchung in a country now occupied by the Chang tribe, which has a culture very similar to that of the Konyaks. A peculiar feature of this country, which is also met with in that described by Mr. Mills, is the number of streams and rivers that flow at right angles to the course that they must eventually take to reach the Brahmaputra.

After crossing the Tupi we climbed the 4500 feet to Chen, a village that has not been visited since Woodthorpe passed through on a survey in 1876. Despite many disquieting rumours to the contrary, our reception was friendly in the extreme. The village, the largest in the Naga Hills, is built on one of the main spurs of the Patkai only a few miles from the summit of one of its highest peaks. Where the village is constructed the spur branches into three. The village is so placed that it commands the approaches to all three spurs. Artificial defences are practically non-existent; presumably its size is considered to be sufficient warning to the intending intruder. I tried to count the number of houses, but had to give it up as a bad job. The houses are not built in rows like in most other Naga villages, but are built here and there on any piece of ground which offers a flat space for a floor, and between the houses are small patches of high scrub jungle, occasional trees, and clumps of bamboos. Near the village, even up to 7000 feet, the fields are covered in rows of pollard alders. The land is therefore richer and produces excellent crops of millet in a rotation of only three to four years. Dr. Hutton found these alders too when he visited Angphang, a village further south. This was in strange contrast to the country we traversed from Naginimara, where trees are practically not to be seen. No rice worth speaking of is grown, and the people appear to live on taro, Indian corn and millet. On the peak above Chen, at 7910 feet, the Survey Officer built his pillar, and the lampmen and their guard were posted. The summit was covered with light prickly bamboos and oak trees. It is at this point that the Patkai, the backbone of the Chindwin–Brahmaputra watershed, bends north-east from its south-to-north bearing. Looking east from the summit the view of both the Chindwin and Hukawng valleys is completely obstructed by the Sangpan range, which, though actually a spur of the Patkai, is on the average higher than it and runs parallel. This spur is roughly 60 miles long, and between it and the Patkai flows the Dilli or Nampuk Hka. The Patkai is provisionally the boundary between the provinces of Assam and Burma, but it has not yet been demarcated. Our Survey Officer however decided that the Patkai range as at present sketched in on the map is half a mile too near Burma.

From Chen, after a struggle to obtain coolies—Chen had threatened to withhold supplying them unless we destroyed Nanwang, an enemy of theirs—we moved downhill again to Sengha Chingui. The latter is a large, clean, well-run village of about three hundred houses. A patrol path runs right round the hill on which the village is situated. We were conducted along it, as it would have been exceedingly dangerous to have allowed the Chen coolies to pass through their enemy's village. Shortly after we left here Sengha wrested two heads from Chen. The men of Sengha wore white *lengtas* with coloured

embroidery on the ends. The *lengta* here is a long strip of cloth which is hung over a cane belt and hangs down as a flap in front. In their hair, which is uncut and done in a bun on the back of the head, were wooden skewers with tufts of variously coloured goats' hair. They were all wasp-waisted, a peculiarity of the Konyaks, where the waist is drawn in very tightly by two or three circles of thick cane which are tied on from about the age of puberty. I almost succeeded in touching fingers and thumbs round the waist of one young buck. The women were more becoming than the usual Konyak type, perhaps because they did their hair more carefully and were cleaner. This was by far the cleanest and best-run Naga village of any that we visited.

From Sengha we crossed the Titu, a tributary of the Tupi, to Tang, where all the surrounding hills were covered with thatching palms. We had to change coolies on the march, as Tang is at war with Sengha and refused the Sengha coolies permission to come on their land. Beyond the shouting of a few very choice epithets at each other over the heads of the line of sepoys, the change over passed off smoothly. From Tang we proceeded *via* Longphong to Hang, or Sangnyu. Sangnyu is the parent village of one of the most powerful confederacies in the Naga Hills. It has no fewer than seventeen " sons." As each son has to build a portion of the Ang's house I was not surprised to find it the longest in the area, 123 yards. There was one fairly recent head-hunting trophy on a small platform in a rubber tree opposite the Ang's house. It had come from Wangkham, a disobedient "son." From Sangnyu we continued along the ridge to Sangsa, then descended to the Teijat and climbed again to Longting and so to Yansa (Joboka), where our next pillar was to be built. This country has been visited more recently by expeditions. At Yansa our reception was very cordial. I had not been quite sure of what might happen here as the Ang had only died a few weeks earlier. He had come to my court at Mokokchung in connection with a land case, and had sworn an oath immediately after I had told him that persons, even Angs, who swore false oaths died quick. He had returned to his village and was dead in three days. After completing the pillar at Yansa we descended into the plains on November 5, arriving out of the hills at Taukok Tea Estate. The next day, entraining at Bhojo, we reached Margherita, the last station but one on the railway. The railway, except for a short colliery line, comes to an end at Ledo. From Ledo many years ago a line was surveyed through to Myitkyina in Burma, but expense and lack of trade support has prevented any further move in this respect.

A few miles to the east from Margherita we entered the hills again, 60 miles north-east of where we first did so. I was met by the Wang of Namsang, who is supposed to be the most influential chief in this area. He was dressed like a lower-class plainsman, and the only thing Naga about him was a string of beads. Taking him with us, our first day's march was to Soha (Dangar Khuragaon). We passed through three small villages on the way, "sons" of Namsang, who had supplied our coolies. Ear ornaments of fretted horn disc against a background of conch shell were here in great numbers. Professor Balfour had asked me to keep a look out for them. The people of the Namsang Confederacy (Longchangs) do not go in for the wasp-waists, though they wear as many as six or seven circles of thick black cane round the waist. The front

of the head is shaven and the hair is grown long and worn in a bun at the back. They wear a light-blue apron, which hangs down before and behind after being wound round the waist and drawn between the legs. I saw only one or two tattooed chests—most Konyaks tattoo their chests. The men looked heavier than the Konyaks to the south. Their houses were built on stilts entirely off the ground, and thatching palms, not grass, used for the roofs, more like Singpho or Kachin houses. In the *morungs*, or bachelors' clubs, were huge hollow tree trunks, which are used as drums. In other parts of the Naga Hills these drums are carved and hollowed out from solid trees and dragged up to the villages with great ceremony. The Namsang people, contrary to custom elsewhere in the Naga Hills, cremate their dead, but they bury the bodies of those who die with any blemish or cut in the skin.

The next day we descended steeply 900 feet to the Subong stream, and climbed 3700 feet to the summit of Subong, Point VII, as we had named it. Having completed a pillar here we moved on the next day down the spur to Changyak. As the chief of Namsang had guaranteed the safety of the lampmen we left no guard. Changyak is the parent village of another confederacy, which holds sway as far south as the headwaters of the Tirap River. It is a surprisingly small village to be the head of such a large confederacy, but it lies on one of the main routes to the plains. Continuing *via* Watlom we reached the Tirap Valley on the 10th, and the South Tirap outpost and the Rangpang country the next day. The Tirap outpost is a small stockaded timber fort on the right bank of the Tirap, guarding a bridge on one of the most-used routes to the bazaars of the plains. Part of the Tirap Valley is administered by the Political Officer of the Sadiya Frontier Tract, but it was only taken over for administration by the Government of Assam in 1926. Our rations had all arrived at the outpost and after two days' rest we started out again.

Marching the first two days along the right bank of the river, the third day we crossed it and camped at Phongsa. Thus doing we passed through the Moklum, or Langlum country. This small tribe, inhabiting eight villages on the slopes between the Patkai and the Tirap, is perhaps one of the least-known in the Naga Hills. They say they have no affinity at all with any of the other surrounding tribes. They speak a different language, dress differently, and wear their hair tied into a large bun right on the top of the head. In appearance the most striking feature is their thick lips and rather large mouths. Seven of their villages fall under the administration of Sadiya, only the parent one, Longchang, lying in the Tribal area. They seem to be less developed than the other tribes. I saw one woman weaving; she was slowly pushing the ball of cotton between the weft and the warp. The shuttle has not reached them. I was surprised to see, though, how much in the last few years they have fallen under the influence of the Singphos (Kachins) as regards dress. The Phongsa people are like the Namsang lot, though Phongsa is a "son" of Changyak. The upper part of the forehead is shaven, the hair is drawn back and worn in a bun at the back of the head, and through this bun is stuck a most unusual type of skewer made from the pared and polished rib of a deer or buffalo. The end of the comb is covered with shellac. The only interesting thing I noticed about the women was their tattooing on the upper arm and shoulder. From Phongsa our path continued along the left bank of the

Tirap, gradually losing height as it passed through the villages of Changra and Tutnyu to the confluence of the Sumhak and Sumnu rivers which form the Tirap.

On the morning of November 18 we moved up the Sumnu valley and camped at Noglo. The coolies who took us there, though late, came from the two nearby villages of Layu and Kothung, and it was a wonderful sight to see both parties streaming down the sides of the valley with the early morning sun glinting on their *daos*. We passed through Layu on the way to Noglo. It has four hundred houses and twenty-one morungs, the largest village in the valley. The houses, as usual for this area, were built on stilts, but some of the main posts were sticking out through the roofs as in the Konyak country. It looks untidy but is really a most excellent idea, as, when the portion of your main post embedded in the ground rots, you merely cut it away and drop the post again into the ground without either having to rebuild your house, or buy a new main post and drag it up to the village with the attendant expense of a feast for the workers. The Layu people came of a different tribe to those encountered hitherto, although I could find no other name for the people but that of their village. The Ang, or sacred chief, is known here as Lu- or Lo-Wang—and contrary to the Konyak custom he is not bound to marry a woman of the same clan. He must however marry into noble blood and has a choice of two clans from which to do so. A feature of the chief's house, where I went for a drink, was the ladder leading to the verandah. It was hewn from a single block of wood, quite 15 feet long by 2 feet wide by 1 foot deep. Noglo was our base for the assault on Point VIII, a peak on the Patkai 9120 feet high. We spent from November 19–24 here. From Noglo onwards up the spur of the peak was a mass of very heavy jungle, and we had great difficulty in finding water both for a half-way camp and, too, anywhere near the peak for the troops and lampmen to be stationed there. We were hoping to get a good view of the plains of Burma and Assam at the same time from the peak, but the weather was much too cloudy, and it was only for seconds at a time that the Survey Officer was able to get his lines on other peaks of the series. Some idea of the density of the jungle on the summit may be gained when I say that it took an average of one hundred coolies three days to clear six lines for observation.

Our work at Noglo completed, we returned through Layu to the confluence and double-marched to Nogna on the right bank of the Tirap. This village was strongly fortified, the only one in the valley that had any defence beyond its natural fortifications. They live here in constant dread of raids from Nauknyo, a large village in the Nampuk Valley, some 40 miles away, across the Patkai. My dog here fell into a pit of *panjis* and was lucky to escape with its life. We had crossed a rickety bamboo bridge over a moat only a few moments before, never suspecting what was below. From Nogna we hurried back to Khimyong, a Moklum village, and by forced marches to Okhutohap, a pass on the Patkai at some 6000 feet, trying to make up the few days we had lost at Point VIII. At Okhutohap, Monka, chief of the Rangpang village of Punyung, greeted us with his coolies and pointed out an egg dressed with two feathers tied to the top of a stick planted firmly in the ground. He told us that he had done this as he heard that the Survey could not work in the rain, and

The Tawa Hka near Shingbwiyang

Coolies crossing the Taga Hka near its source

New Buddha arriving at Dalu

The mouth of the Tsamak Hka

Tanai River gorge above the Kyaukse rapids

Pulling the dug-out round the Kyaukse rapids

this was a certain preventative. The charm certainly worked, as for a whole week to come it never rained once. We wished we had met him sooner. From Okhutohap we made a sortie from our ration base in Assam and established a lamp squad with its guard on Mu Bum, a peak 8200 feet high on the Sangpan Range which I have mentioned earlier. This range, really a spur of the Patkai, leaves it some 8 miles north of Okhutohap and a few miles south of the Nawngyang lake. We were sorry that we had no time to visit this lake, which is at 3000 feet near the summit of the Patkai. It is about $1\frac{1}{2}$ miles in diameter and is surrounded by a marsh quite 8 miles long by 2 miles broad. The waters of the lake flow into the Loglai, thence to the Tarung and so southwards to the Chindwin.

The assault on the Bum was made with the aid of Rangpang coolies from the administered area of the Sadiya Frontier Tract. Our route lay *via* Hepachet Hi, a transfrontier Rangpang village, to the site of the deserted village of Shangke, some 2000 feet up the Sangpan towards Mu Bum. From Shangke we had great difficulty in getting to the summit owing to lack of adequate water supplies and also to the fear of the coolies to come with us, as they said the mountain was infested with tigers. We certainly saw three in two days. One night in camp near Shangke, whilst the scouts had gone ahead to search for water, the coolies suddenly raised a terrific scream, causing a great flurry in camp and the turning out of the guard to man the perimeter, for we built stockades every time we camped. The scream was a most eerie one, first started by one or two men and gradually growing in volume till the whole two hundred men were yelling at the top of their voices and then gradually dying away till only two voices could be heard and then complete silence reigned again. It turned out to have been a were-tiger which had passed through the Rangpang coolie lines. Its tracks certainly showed five toes, which the Rangpang will tell you is a sure sign of a were-tiger.

Having eventually completed our pillar, we returned to Okhutohap and descended the Assam side of the divide to the river Namchik, a tributary of the Tirap, to pick up more rations, and the next day climbed again to the summit of the Patkai, to a pass at 6257 feet, from whence we were to make our dash to the ration base in Burma on the Chindwin. Our route lay *via* Telekkuk, a small village of about seven or eight houses and very typically Rangpang in this respect. The people here are of the Langshing clan and, as we found in all but a few Rangpang villages, dress entirely like the Singphos, having learned to make their cloth. The dress consists of a tartan *lunghi* or skirt, usually of blue, green or red check design; a short wide-sleeved blue coat buttoning down the front and a tartan *pugri* wound round the hair, this latter sometimes worn at a most rakish angle by the young bucks. Slung over the right shoulder and passing under the left armpit is a cane band to which is attached a sheath for the indispensable single-edged *dao*. Tied to the cane are half the lower teeth of a tiger. A few twisted strands of elephants' hair are worn round the upper calf. The women, too, dress like the Singphos. They wear a long black skirt reaching almost to the ankles. Over this is worn a short light-coloured skirt which reaches half-way down the thighs. A short-sleeved bodice usually of a dark colour and a light cotton cloth thrown over the shoulders completes their dress except for a white *pugri*. Heavy brass bracelets

are worn on the arms and sometimes a few strings of glass beads round the neck.

Leaving Telekkuk we descended to the Taiyong, one of the main streams forming the Tarung, one of the chief tributaries of the Chindwin. Crossing the Taiyong we climbed to Litu and descended again to this river, passing only two small hamlets on the way. At the Taiyong we found an old bridle-path constructed by the late Mr. Dewar, Sub-divisional Officer of Kamaing when he came this way from the Hukawng valley on the human sacrifice abolition expedition of 1930–31. We followed this bridle-path along the Taiyong, later called the Namyung, occasionally crossing the river to where there was the easier going. In some cases we were obliged to ford the river and in others crossed on low bamboo bridges, temporary affairs which had been constructed a few days previously. All the way along the river was dense bamboo jungle overshadowed by huge trees. We camped on the night of the 15th at the confluence of the Taikham. Not even here could we get a glimpse of the surrounding hills, though the valley had broadened out considerably and the river-bed was quite 50 yards wide. The river was teeming with *mahseer* and *bokha*, and both Major Bull and I would have liked to have sent in our resignations and camped here for the rest of the year. We moved away from the river next day, south, through Tagap Ga and on to the deserted site of the village of Nathkaw. Here we climbed again to just over 4000 feet, the ridge being a spur of the Sangpan range. From Nathkaw we continued for the next few days along the disused bridle-path, dipping ever lower towards the Hukawng valley, of which we caught only occasional glimpses, for it seemed to be eternally shrouded in mist. On the 18th we arrived at Shingbwiyang, a small Singpho hamlet of about four houses on the left bank of the Tawa Hka, a river which flows south to the Chindwin. From the Patkai to Shingbwiyang we only passed through two miserable villages. The Rangpangs populate an immense area very thinly indeed. We were welcomed at Shingbwiyang by old Nawm Kawm, the chief, a useful old man with a wicked glint in his eye. He claims overlordship of most of the Rangpangs. They acknowledge this claim and bring him yearly presents of fowl and pigs. On the Assam side it was the plainsmen who would bring presents to the Nagas. Shingbwiyang is in the extreme north-west corner of the Hukawng valley, which has only been administered by the Burmese Government since 1934. The Hukawng valley is a large circular pit some 150 miles in circumference, embracing the four main rivers, the Nambyu, Tawang, Tarung and Tanai, which form the Chindwin. A peculiar feature of its south-eastern extremity is the low, narrow belt of hills only 1000 feet high which divide it from the Mogaung valley, the Mogaung being one of the main tributaries of the Irrawaddy. The Hukawng is rich in gold and precious stones. Amber is also found in quantity but the mines have closed down as there is little sale for it now.

Between Shingbwiyang and the Tanai lay a dense mass of swampy jungle, through which we hacked our way for eight hours until we eventually burst out suddenly on to the glorious sight of the broad fast-moving Tanai River. The banks where we emerged from the jungle, a few miles above the mouth of the Tawa Hka, were steep, and the bed of the river a mass of large rounded stones. Where the river curved were huge sand-banks. Close to our camp a

few Shans from Ningbyen, a village upstream, were washing for gold. The gold is not to be found in any quantity and is very soft. When the harvest is in however the gold rush commences and the local people, by washing, can find as much as three rupees' worth in the day.

I had sent word ahead for boats; they arrived on December 23, and we managed to get everybody and everything off that evening, though it was very late when we started. There were in all fifty dug-outs of various sizes, which the boatmen lashed together securely in pairs. Night came on as we were only a short distance downstream, but before then we had luckily shot a difficult rapid, not marked on the map. We had some anxious moments waiting for the last boat to come through in the dark, as the men were inexperienced and did not know the channel. We camped for the night 9 miles downstream. The next day, Christmas Eve, we hoped to reach Dalu, but had to tie up for the night at the mouth of the Ahawk Hka, having gone only 17 miles. The boats were loaded so heavily that we could not move much faster than 2 to 2½ miles an hour. We completed the last 6 miles to Dalu on Christmas morning. Dalu is a mixed village of about sixty Shan and Singpho houses. Close to the village we found our rations under the care of the chiefs. They were being brought up by mule convoy from the railway at Myitkyina, sixteen days away by bridle-path. Despite the pleasure with which we were greeted it was only with the greatest difficulty that I was able to buy a buffalo for the Sema coolies' Christmas dinner. In the evening the Semas danced for us and we all listened-in to His Majesty King George's Christmas Day message on my wireless set, which, despite several crashes on slippery paths and at least two immersions in rivers, was still working well.

Our next objective was just visible from Dalu, Lungwukaw Bum, a towering peak on the Sangpan Range. We stayed two days in Dalu and on the morning of the 28th ferried the whole party across the Tanai in dug-outs. We marched first along the bed of the Taga Hka for a few miles, and then struck west across its valley to the Tayup Hka, another smaller tributary of the Tanai. All the way along the banks of the Tanai and Taga were opium fields with the poppies a blaze of colour, a beautiful but sad sight. The next day we continued along the left bank of the Tayup some 500 feet above the river to come down and cross it below the village of Wanka. We had intended to attack the Lungwukaw Bum by climbing to the summit of the Sangpan along the Gum Ga-Rangsen path and then to cut our way along the top of the ridge to the peak. On reaching the vicinity of Punlum, a village near Gum Ga, we found however that both these villages had moved their sites some few miles to the east, since the area had been last visited and the chief of Punlum advised an attack on the peak by getting to the summit of the range along the Gum Ga–Risa–Ranu path. Following his able advice, after spending a night at Gum Ga, a Rangpang village of about thirty houses, we turned north through Risa and, continuing for some 12 or 13 miles, found ourselves on the Yangme Hka. The next day we climbed up the path till the barometer registered 6000 feet and, after cutting and hacking our way for about three hours, or half a mile, round the side of the spur, we eventually came upon a cataract with a fair volume of water. The sides of the mountain were far too steep to make any attempt at a camp, and we just spread

out and lay down wherever we could severally find a ledge sufficiently long and wide. Next day, retracing our way to the Ranu path and continuing along it, we reached the saddle between Lungwukaw and Pungra Bum, another peak at 8690 feet. Here we found water, and whilst the Survey Officer and the troops proceeded to do their work on the summit of Lungwukaw Bum I climbed Pungra Bum, and here, at last, was a wonderful view of the Nampuk valley with the Patkai towering behind it. The valley is obviously over-populated, the slopes on both sides are bare and treeless. I could make out the huge villages of Yangno and Ranu, Rangse and Nauknyo, all containing well over one hundred houses. This over-population seems surprising when one considers how terribly under-populated is the area on the other sides of the Patkai and Sangpan in the Rangpang country. I did not meet many people from the Nampuk valley, but they all have a resemblance to the Konyaks rather than to the Rangpangs. Some of the people I met from this area later in Singkaling Hkamti were very similar to the Chang tribe, just to the east of Mokokchung. The most striking similarity is a design like the marking on the catfish which the Chang women tattoo on their foreheads; one of the tribe's ancestors is stated to have been one of these fish. There is a very gradual movement taking place from this area to the plains round the Tanai, the Nagas migrating down to the banks of the river rather than living on the practically uncultivated eastern slopes of the Sangpan. No Naga would live in the heat of the plains if he could get his living in the cool of the hills, but I could find no reason for their non-occupation of the eastern slopes of the Sangpan.

Completing our work on the peak we returned as we came and were in Dalu again on January 7. Spending two days in Dalu I moved off again north-west, to effect a liaison with Major Osmaston's party who were due at Mu Bum on the 18th. This time we marched along the left bank of the Tanai for two days through extremely dense jungle. There was no path and we found that by wading in streams we could get along easiest, though our feet often got numbed with the cold. We crossed the river by dug-out where we had first taken to the rafts and pushed along our old path to Shingbwiyang (how the signallers used to hate that name!). Here we found an old bridle-path going our way and were able to make use of it through Shamshing, Hkalak and Kachaing to Sanching at the foot of a long spur rising due north to Mu Bum. In Kachaing and Sanching the Rangpangs appear to have maintained more of their own culture than elsewhere. In Kachaing was a grave underneath a rice granary. It is customary to bury sometimes in such a place in lieu of under the house. On the path just outside the village were some lightly built bamboo arches. Hanging from these were a few cone-shaped hats and some split-bamboo clappers. The demons are driven out of the village, I was told, by the whole population dancing through the village shrieking and shouting and beating gongs, clappers and drums. When the exhausted mob has reached the arches the clappers and hats are hung up on them and the demons are out of the village for another whole year.

Sanching, a village of some forty very large houses, was the biggest Rangpang village we came across. The Rangpang family all live in one house, each part of the family having its own room, which leads off to one side of a long

passage running the full length of the left side of the house. The Rangpangs are, or rather were, human sacrificers: the Governments of Assam and Burma have done their best to put down the evil practice. In Sanching they told me an interesting story of the foundation of the custom. In the past, they said, they had always sacrificed monkeys, but one day, when sacrificing one, a voice was heard to come from the sky. "Of what use is a monkey?" and at the same time a human hand fell at the feet of the sacrificers. The priests interpreted this omen to mean that the spirits required a human being to be sacrificed and, though they hated doing it, the practice was started rather than that the tribe should die from disease or starvation. This tribe is rather different in one respect from all the other tribes encountered. A man must marry into his own clan. There are so far as I could gather twenty-one clans, each of which confines itself to a village, and usually the village is just named "the men of so-and-so clan" instead of being called after some nearby feature.

Leaving this interesting village on January 19 we climbed the mountain to find Major Osmaston had already arrived. We stayed here on the 19th, the temperature in the night being 26°. There were a few inches of snow on the ground, but we were not the worst off, as news came through by helio that there were 2 feet of snow on the summit of Point VIII at 9120 feet. I had here my first opportunity of watching the observations being made, and it was rather a wonderful experience sitting in the complete stillness with the lamps winking at one from the distant hills in all directions. The Himalayas were distinctly visible to the north and north-east: an unbroken line of snowclad peaks. The Patkai unhappily shut off our view of Assam. On the 20th we moved down again to Shangke, and, taking a short cut to the Namyung, returned *via* Shingbwiyang to Dalu. On January 22, on the way down to Namyung, surprised at the silence from the Empire Broadcasting Station, I tuned in to Germany to hear the announcer say in English "the German nation joins with the British nation in mourning the death of her beloved Sovereign."

On March 1, owing to impossible weather conditions, Major Osmaston decided to close down Survey operations for the season. On the same day a new brass Buddha arrived by river at Dalu, having been brought from Mandalay. We must have been rather a nuisance to this village with our continual call for eggs, fowls, goats, pigs, and buffaloes, and I am sure they connected these two events to the glory of Buddha and the impotency of the unbeliever as typified by the Survey Party. There was great commotion on the river bank as it was brought in. One small boat paddled by two men did continuous circles round the raft as it headed slowly for the bank with a band of drums, cymbals, gongs and bells in full attendance. The idol was then hoisted on to a decorated bamboo platform and carried up the bank in procession to the chief's house in the village, where it was left pending its removal later to the Pagoda. Having said good-bye to the Survey Party, which was returning *via* Maingkwan and Kamaing to the railway and thence to Rangoon, we set off down the Chindwin on our way back to Assam, half the party marching and the balance in the dug-outs. I do not think any of us were at all sorry to be leaving Dalu, a most dismal spot, where the ground mist forms at about 9 o'clock in the evening and lasts till nearly 4 o'clock the next afternoon.

On March 11 the river party reached the first of some difficult rapids to be negotiated, the Tsamak series. Here everybody disembarked except the boatmen, who set off with the loads left in the boats. The rapids extend over half a mile and there are four really bad places, the worst directly opposite the mouth of the Tsamak Hka, which comes in on the left bank of the river. Things had been made more difficult by an abnormal drop in the level of the river, which had left many more dangerous rocks to be negotiated. The dug-outs which were joined together in pairs for added stability all got safely through the upper rapids, but the second raft as it passed through the next rapid struck a rock with such force that the two dug-outs were wrenched apart and the six boatmen and all the loads were flung into the river. They were all rescued, the only loss being a few bags of rice. The next raft to come down did the same thing, but it was rather worse, as one of the boatmen got caught under water between the two boats and was in serious danger of drowning, until one of the men left on the wreck with great presence of mind seized his *dao* and hacked the two boats apart, despite the fact that they were then full of water and careering towards the head of the next rapid. This being quite enough for one day we camped at the head of the next series, the Hinkiu rapids, and dried everybody and everything in the hot sun. The next day we had to unload everything, and the dug-outs were pulled separately through the water whilst the loads were carried to the bottom of the rapids along the steep rocky sides of the gorge: a most laborious process. The second rapid was negotiated by shooting it. In every case the boats were swung around and one boat always filled with water. Then loading again we floated downstream some 6 miles to the head of the Kyaukse rapids. The river here is very narrow, being only some 20 yards across as compared with the width at Dalu of some 600. The Chindwin is 519 feet above sea-level at the rapids, so that a dam here about 150 feet high and 200 feet across would flood the whole of the Hukawng valley. Dalu itself would be 50 feet under water. There is a sudden drop of 7 feet in the river-level at the Kyaukse rapids, so the boats had to be taken out of the water and pulled round. The boatmen built a framework of large branches much like the Konyaks do when they are pulling up a new log gong to the village and the boats were pulled over, one by one, with cane ropes. On the 14th we reached Man Pang, a Shan village of some sixty houses, and on the 15th Singkaling Hkamti, where we linked up with the land party who had had an uneventful journey along the right bank of the river to Sailung, where they ferried across it.

Singkaling Hkamti is a large clean village of about sixty houses and capital of the State of the same name. There is a pagoda (temple) and a *kyaung* (monastery) with many saffron-robed monks. The Sawba, or prince, a pleasant young man who smoked eternal perfumed cigarettes, sent down his chief minister to welcome us. After staying here two days in the forlorn hope of the Government launch coming for us, as previously arranged, we left on the 18th for Homalin, half the party, as before, going in the boats. Camping each night at a Shan village as we progressed down the river we arrived at Homalin on March 25. Homalin is the headquarters of one of the sub-divisions of the upper Chindwin district. Making use of the Government launch, the *Northern Ranger* (which had been unable to get up to Singkaling

owing to the abnormal fall in the level of the river), and the Irrawaddy Flotilla Company's regular steamer, we reached Sittaung on the 27th, 90 miles from Homalin and 350 from Dalu. From here, marching along the bridle-path by night as the days were too hot, we reached Tamu on the Assam–Burma frontier on the 30th. On March 31 we entered Manipur State and reached Imphal, the capital, on April 3. Here we engaged a fleet of lorries, and, motoring over the hill road, arrived in Kohima, the headquarters of the Naga Hills district, on April 5, exactly 170 days after starting.

The Naga Hills—a beautiful country and a happy and lovable people. May they long be spared from the terrible consequences of Western Civilization.

DISCUSSION

Before the paper the CHAIRMAN (Admiral Sir WILLIAM GOODENOUGH) said: We are all the more sorry that the President cannot be here to-night because he has actually been in the country that we are to hear about. The account of it is to be given by Mr. Lambert. Mr. Lambert is a Police Officer who has been in the Political Service for some time, and who accompanied a Survey of India party which was engaged on the triangulation starting from the great river which bears the name of the son of one of the trinity of gods of India, the Brahmaputra. The journey that we are to hear about extends across to the Chindwin, which is a river tributary to the Irrawaddy. The people who inhabit the Naga Hills are the people called the Naga. Whether mongoloid or australoid or a mixture of both perhaps we shall be able to know after we have heard the lecture. It is particularly of the people that we are to hear in the lecture which I now ask Mr. Lambert to deliver.

Mr. Lambert then delivered the lecture printed above, and a discussion followed.

The CHAIRMAN: After that very delightful description of a little-known country I am sure you would wish to hear something from Dr. Hutton, who has been four years or more as District Commissioner in the part of the world about which we have heard and with whom our President went on the journey of which I spoke at the opening of the meeting.

Dr. HUTTON: The country which Mr. Lambert has been in was last visited by a very well-known Fellow of this Society in his day, namely, Major-General Woodthorpe, who was in the Naga Hills in 1876, and by Mr. S. E. Peal, who visited the Nongyang lake in 1879. Until then most of the country was completely unvisited. I had the good fortune to visit the part further south than that visited by Major-General Woodthorpe, and an area still further south, which no one had previously been into, in 1923–24. With Captain Kingdon Ward I went as near as we could get to Saramati in my last trip to the Naga Hills in 1934 or 1935.

Some of the points raised by Mr. Lambert were of great interest. One is the question of platforms made for pulling boats round rapids. He described them as being very like the platforms made by the Konyaks for dragging the new canoe gongs up to the villages. The canoe gong is made exactly like a dug-out canoe, hollowed out of a tree perhaps 40 feet long, and played by the bucks of the village, perhaps twenty or thirty all hammering on it with things like dumb-bells. These I suspect are reduced canoe paddles, and I cannot help thinking that this gong is in origin a dug-out canoe. Manipuris used a dug-out canoe habitually as a means to signal by, beating on the sides of the canoe, and in Fiji regular signals are used and beaten by the handles of paddles hammered on the

owing to the abnormal fall in the level of the river), and the Irrawaddy Flotilla Company's regular steamer, we reached Sittaung on the 27th, 90 miles from Homalin and 350 from Dalu. From here, marching along the bridle-path by night as the days were too hot, we reached Tamu on the Assam–Burma frontier on the 30th. On March 31 we entered Manipur State and reached Imphal, the capital, on April 3. Here we engaged a fleet of lorries, and, motoring over the hill road, arrived in Kohima, the headquarters of the Naga Hills district, on April 5, exactly 170 days after starting.

The Naga Hills—a beautiful country and a happy and lovable people. May they long be spared from the terrible consequences of Western Civilization.

DISCUSSION

Before the paper the CHAIRMAN (Admiral Sir WILLIAM GOODENOUGH) said: We are all the more sorry that the President cannot be here to-night because he has actually been in the country that we are to hear about. The account of it is to be given by Mr. Lambert. Mr. Lambert is a Police Officer who has been in the Political Service for some time, and who accompanied a Survey of India party which was engaged on the triangulation starting from the great river which bears the name of the son of one of the trinity of gods of India, the Brahmaputra. The journey that we are to hear about extends across to the Chindwin, which is a river tributary to the Irrawaddy. The people who inhabit the Naga Hills are the people called the Naga. Whether mongoloid or australoid or a mixture of both perhaps we shall be able to know after we have heard the lecture. It is particularly of the people that we are to hear in the lecture which I now ask Mr. Lambert to deliver.

Mr. Lambert then delivered the lecture printed above, and a discussion followed.

The CHAIRMAN: After that very delightful description of a little-known country I am sure you would wish to hear something from Dr. Hutton, who has been four years or more as District Commissioner in the part of the world about which we have heard and with whom our President went on the journey of which I spoke at the opening of the meeting.

Dr. HUTTON: The country which Mr. Lambert has been in was last visited by a very well-known Fellow of this Society in his day, namely, Major-General Woodthorpe, who was in the Naga Hills in 1876, and by Mr. S. E. Peal, who visited the Nongyang lake in 1879. Until then most of the country was completely unvisited. I had the good fortune to visit the part further south than that visited by Major-General Woodthorpe, and an area still further south, which no one had previously been into, in 1923–24. With Captain Kingdon Ward I went as near as we could get to Saramati in my last trip to the Naga Hills in 1934 or 1935.

Some of the points raised by Mr. Lambert were of great interest. One is the question of platforms made for pulling boats round rapids. He described them as being very like the platforms made by the Konyaks for dragging the new canoe gongs up to the villages. The canoe gong is made exactly like a dug-out canoe, hollowed out of a tree perhaps 40 feet long, and played by the bucks of the village, perhaps twenty or thirty all hammering on it with things like dumb-bells. These I suspect are reduced canoe paddles, and I cannot help thinking that this gong is in origin a dug-out canoe. Manipuris used a dug-out canoe habitually as a means to signal by, beating on the sides of the canoe, and in Fiji regular signals are used and beaten by the handles of paddles hammered on the

sides of the canoes. The beating on one of these hollowed-out wooden gongs, as I prefer to call them—Professor Balfour calls them xylophones—is heard for miles across the valleys on a still night in the hills. The significance is well known from one village to another. You can tell whether it is the chief being buried, whether the village that is beating the drum has taken heads, or whether they have lost heads. I suspect that that particular instrument, curiously enough in people who cannot swim and know nothing about navigable water, is still derived from the canoe.

Mr. Lambert mentioned the burial of people under granaries. Of course many of the Konyaks do not bury at all, and the Aos do not. Apparently they prefer to smell their grandmothers as long as they can. It is a strict principle of a number of villages in the Naga country never to change the location of a cemetery. They never make a new cemetery, and in some cases an ordinary cemetery is built on the road just outside the village in order that the souls may migrate easily to the village from which the original colony came. In some cases the village grows larger, and must spread down the ridge on which it is built. As it is not possible to move the cemetery, the village street may be lined with corpses; you walk between sets of houses and then you get a row of corpses, some fresh and some old, and then you start houses again. Nobody seems to mind and nobody seems one penny the worse. The point of putting the heads under a granary is perhaps some curious connection between the souls of the dead and the crops. In some villages they wait until the body is nine days ripe and then detach the head. That is put into a phallic stone cist, and the body is exposed in its coffin in a *ficus* tree. In some of the villages I visited with Captain Kingdon Ward the body was hung up in the living-room inside a wooden canoe-shaped trough, and it would be kept there until the next sowing. If the individual dies just after the sowing the body is kept there for the whole year. If he dies just before, he will still be disposed of at the sowing, even if a little green. Nine days is the allowance. Then the body is dismembered in order that it may release the soul to go into the crop, to ensure a good harvest the following year. The bones are then gathered together and put in a pot inside the granary, and left alone there. I think there is a very definite connection in the idea of the life cycle, in which the soul of the human being goes into the crop, is eaten again and comes back into the human being. That I believe to be the meaning behind burying underneath the granary.

It is too late to enter into all the questions arising from Mr. Lambert's most interesting paper. He showed me so many old friends that I could talk about them for hours. One thing I cannot believe is that the Sema coolies could not drink all the beer offered them. The only explanation can be that they have turned Christians since I was in their country, because the Christians in that part of the world do not drink. The Semas I knew would have polished the beer off, though they might not have carried loads the next day!

The CHAIRMAN: Colonel Rich was in former years in charge of the Survey in that part of the world. I will ask him to add a word or two on the subject.

Colonel RICH: The lecture has been of special interest to me, as during three cold weathers, from 1920 to 1923, I lived in the unadministered tribal country described by the lecturer, on the east or Burma side of the Patkai Range, whilst in charge of the Survey of the Hukawng valley and the watershed of the Chindwin River to the north and west of this valley. The photographs we have seen of some of the leading chiefs are those of old personal friends, and I have camped in many of the villages shown on the screen.

It was known to the Government of Burma that the Kachin tribes in this area owned large numbers of domestic slaves of their own race, and I was

ordered not to interfere with them, unless any of these slaves were found to be Indians, in which case they were to be bought from their owners at the current market price and liberated. During the course of my tours round the valley, I came across a few of these Indian slaves and bought them their freedom at an average price of £5, except in the case of a few of the older ones, who had lost all touch with India and were quite happy to remain as they were with masters who treated them kindly.

During my second year, when the Survey had gone further west towards the Patkai Range into the tracts inhabited by Naga tribes, my surveyors began to send in reports of evidence they had seen of recent human sacrifices. I sent these reports to the Burma Government, but they were inclined to consider them as old wives' tales of practices which had not been known for many years. In the following season, therefore, I received orders to find out if these reports were authentic or otherwise, and unfortunately they turned out to be true, though only a few human sacrifices took place each year.

My surveyors also found a slave girl in one village, who was to be sacrificed during the summer when my survey party had left the locality; and after a lot of bargaining I managed to buy her from her owner for £40, and sent her out of the country to the nearest town in Burma, Myitkyina on the Irrawaddy, where she was taken care of by some missionaries. Unfortunately she became ill and was sent to the local hospital, where she was given a powder which she imagined to be poison, and during the night she went out and drowned herself in the river.

Two years later I accompanied Sir Harcourt Butler, late Governor of Burma, on his expedition to that country in 1925, when he gave orders to the chiefs that all slaves must be set free and human sacrifices stopped, and since then this tribal territory has been administered by the Government of Burma.

The CHAIRMAN: I will ask Captain Kingdon Ward to say a few words.

Captain KINGDON WARD: I believe that Mr. Lambert, who has given this very interesting lecture, is a Police Officer in the Indian Police, and I think that you will have gathered from the extraordinarily hard time that they had in the country that even in India a policeman's lot is not a happy one. Although he was talking about locating points by means of Survey Parties in the Naga Hills, I gather he was not really on point duty!

My only claim to say anything on this occasion is that two years ago, thanks to Dr. Hutton, I was permitted to walk across, in a wholly unofficial capacity, from the Brahmaputra to the Chindwin, a good deal south and by a shorter and easier route than that of the lecturer.

Mr. Lambert told us an interesting fact, that the average height of this range which runs down between Burma and Assam is about 6000 feet, and he mentioned the peak of Saramati, which he says is over 12,000 feet high. It is a very curious thing the way Saramati stands up in isolation, very much higher than the surrounding country. Thanks also to Dr. Hutton, I was able to join his punitive expedition on a sort of little holiday, and he took us to climb the peak of Saramati.

I regret that Mr. Lambert did not touch upon the botany of the country. I am afraid that is the only thing which attracts me to that part of the world. I go to look for plants, and Saramati is perhaps a floristic island. It is so much higher than all the surrounding country that probably on top there are plants which grow nowhere else in the world. Dr. Hutton, Major Hartland, and myself tried to climb the peak. We only got up to about 10,000 feet, but that was quite sufficient to whet our appetites, and we did find a possible route to the summit. I think if we had had the time we could easily have got there. If

anybody in future wants to know the route and has the time, and of course the permission, to climb Saramati I will be pleased to enlighten him. I think Mr. Lambert mentioned some one who is alleged to have gone to the top from the Burma side last year. Anyway, he did not bring down any plants; he just went up and came down again, so we are not much better off from that point of view.

The Chindwin, of which Mr. Lambert showed us some extremely graphic pictures, is a very interesting river. He showed you the great basin of the flat, low-lying Hukawng valley, and pointed out how on the Burma side the mountains between the Chindwin and the great Irrawaddy are only about 1000 feet high. Professor Gregory has pointed out that the Chindwin river is far too small for its valley; and that this valley must have been cut out a long time ago by a very much bigger river, which seems to have come down through Tibet and flowed across into the Hukawng valley over a very low gap in the mountains, called the Hukawng wind-gap. The river was probably the Tsangpo. How it afterwards managed to get switched off into the Brahmaputra valley, leaving only a miserable trickle at the source of the Chindwin, is a point not yet cleared up.

The hour is late, so I do not think I need say anything more except to thank Mr. Lambert and say how much I have enjoyed his extremely interesting lecture.

The CHAIRMAN: I should also like to thank Captain Kingdon Ward and congratulate him on his endeavour to reach the top of Saramati. There is time enough yet for him to do it, judging by his appearance. To-night it is not flowers or mountains or even country that are the principal interest. Mr. Lambert has discussed mostly the people who live in the country he visited, people who live under a civilization different from ours, but a civilization none the less, and the more we hear of different parts of the world the more it seems to me we have to realize that there are different civilizations. It may not be concerned with arms and aeroplanes and such things, but still it is civilization.

I assure you, Mr. Lambert, that you have given us an evening of very great interest. One saw, underlying the easy way in which you spoke, what we in this Society so often share: hard work, great application, immense preparation beforehand that things may go right. To come through the work with all these coolies without, I think you said, the loss of a life is a great accomplishment. When two or three Englishmen collect a big party together and take it successfully through six months' travel involving dangerous river crossings, illnesses, and disease, without loss of life or trouble of any kind, they are really achieving something that does immense credit to them as leaders.

The hour is somewhat late, though not a minute of the time has been wasted. We offer you our warmest thanks for a delightful evening and a description of really first-class interest. I understand you are going back on Thursday next, and I may say that Mr. Lambert put off starting on that delightful thing, a sea trip—he is going across to Marseilles by train—in order to give the lecture here to-night, when he might have been in the Bay of Biscay instead! So we owe him an added debt of gratitude. Thank you very much, Mr. Lambert.