

FIRANK MCINTOSH has chosen ns the motif of this month's cover design a dragon temple from northern Siam, where Chinese influence is obvioun
FRANK CARTER BANCROFT spent three years in India-one in a bazar in Lahore, one in Labindranath Tagore's school at Santiniketan and one as a free lance jouralist in Calcutta. Mr. Bancroft has served as correspondent for The New York Times, The Christian Scicnce Monitor and other newspapers.
RABINDRANATH TAGORE, India's most distinguished contemporary man of letters, needs no introduction to Asta readers. Tagore's sketch bes been translated hy Bhabnni Bhattacharya, the translator of a collection of poems and sketches by Tagore entitled The Golden IJoal, and himself a contributor io English and Bengali periodicals.
MASANORI ITO, formerly chief editor and director of the Tokyo Jiji Shimpo, is considered one of the outstanding Japanese authorities on naval questions. As foreign correspondent of the Tokyo Jiji he covered the Wishington Naval Conference of 1921-1922, as well as many other outstanding events.
LIN YUTANG is the founder and editor of the two fortnightly Chincse journals Lun Yu and Jen Chien Shih and author of several volurnes of the Kaiming English readers and essays. Dr. Lin holds an M.A. degree from Harvard University and a Ph.D. degree from the University of Leipzig.
JOSEPH AUSLANDER, one of the best known of contemporary American poets, is lecturer in poetry at Columbia University.
AUDREY WURDEMANN is the author of a volume of poems entitled Bright Ambush
R. W. G. HINGSTON, as medical officer and naturalist in the Indian Medical Service, spent much of his time on scientilic expeditions, notably the IndoRussian Pamir Expedition and the 1924 Mount Everest Expedition. Since his retirement from that service, Major Hingston has been associated with still other expeditions-in Greenland, British Guiana and various parts of Africa.
CLARENCE AUGUSTUS MANNING is assistant professor of Slavonic languages at Columbia University. Dr. Manning has translated several volumes by Russian authors, edited An Anthology of Czechosloval Poetry and written many articles on Slavonic subjects.
GRACE E. WILLS was born and brought up in New Zealand and taught in the schools there, but for the past five years she has been an American citizen. Mrs. Wills visited Western Samoa in the course of a journey home to New Zealand, in 1930. Since that time she has kept in close touch with Samoan affirs.
LOCKIE PARKER has been teaching English in a girls' lycée in a Turkish town and studying the general problem of the education of Turkish girls, in order to give her views on this subject to the Turkish Educational Association.

ARTHUR G. COONS, of the Department of Economics at Occidental College, Los Angeles, recently spent a yenr in China investigating economic and financial conditions. Professor Coons, who has specialized in the study of Chinese finance, is the author of The Forcign Public Delt of China.

JAWAHARLAL NEHRU, leading Indian Nationalist, is back in prison as this concluding instalment of "Prison Ietters to Indira" goes to press.

GEORGE KIN LEUNG is an American-born Chinese journalist who, since 1921, has lived in China, where he has made a special study of Chinese drama He handled the publicity for the Chinese actor Me Lan-fang on his tour to the United States.

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Mirhard J. Walah
 ADVIBOH: EDITORS ................ Gertrude Emerion Sen, II. J. Tinperiey ART DIAECTOH

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# A NatURALIST ON THE 

## ROOF OF THE WORLD

By R. W. G. HINGSTON

TTHE Pamir plateau, bleak and empty, carved into a chaos of mountain grandeur, is the meeting-place of three great empires, Russia, China and India. Travelers bave called it "The Roof of the World." The name is not inapt. For, when we stand on one of its innumerable pinnacles, at a lieight of about 20,000 feet, we do feel ourselves above all mundane things. To the north is Russia, to the east China, to the south India. We can direct our gaze over each in turn. The earth seems, as it were, spread around us and beneath us. And what a spectacle it is! Wherever we look we see nothing but endless glaciation. Ridge upon ridge, crest upon crest, the summits seem to spread themselves almost to infinity. It is like looking on a wind-tossed ocean where every breaker is a snow-clad peak. Moreover, it is an ocean untraversed and uncharted. Only here and there have men penetrated its larger defiles. Of all these summits that we look on scarcely one has got a name. It is an unnumbered myriad, grand, desolate, unknown. Where empires meet we expect human activity and bustle; yet here there is nothing but mountain savagery. The earth has no more lofty plateau and no more forbidding wilderness.

How do we get to the Roof of the World? It is a long and difficult journey that necessitates a complete crossing of the Himalaya. Such a cfossing cannot be undertaken light-heartedly. For the Himalaya is not one range, but a parallel series of ranges, each with its own peculiar obstacles, passes, gorges, glaciers, cliffs. We must equip ourselves as if for mountain exploration: for it will take us more than a month to get across.

We start from Srinagar, the capital of Kashmir. Here in a valley of renorned beauty we set about the necessary preparations. We are in a green expanse ringed round by mountains all capped with perpetual snow. It is like an emerald in a white setting. Placid lakes are here and there spread out in the greenery; there are patches of golden corn with villages in the midst of them; on the lakesides are remains of kingly ruins and qardens which the Afghan conquerors laid out. But our business is not scenery. It is organization. We collect the foodstuffs which for months must be carried by coolies; warm, fleece-lined clothes, tents, sleeping-bags, ice axes, climbing-boots and all the other paraphernalia necessary for the journey.

Before us is a march of forty days over a succession of five ranges. At its commencement two snow-bound passes must be crossed. The first is the Tragbul ( 11,900 feet). It leads northward from the Kashmir valley and, at this season-the end of April-is covered in deep snow.

We get across it at dawn while the snow is still hard; then descend through piles of avalanche débris intermingled with huge boulders and tree trunks that the avalanches have torn from the mountain sides. Then we go forward to the more difficult Burzil Pass. Our route to it runs through typical mountain valleys. Snow lies thick on the hillsides; torrents dance along the valley beds; in the mornings there hangs from every pine needle a delicate lacelike tracery of ice. From time to time, now in front of us, now behind us, we hear the roar of avalanches crashing down the hillsides.

The scenery is gorgeous. Isolated peaks of pyramidal shape, often streaked with lines or bands of conifers, rise up like islands above a waste of snow. As a rule one of their aspects is bare of vegetation, while the other supports it in fair luxuriance. At times the trees arrange themselves in arrow-like manner. We see the bands of conifers converging from base to summit, their green lines giving the impression of feathery barbs, the whole looking somewhat like an arrow shaft.

It is impossible at this season to cross the Burzil by daylight. We should only sink waist-deep in the thawing snowdrifts. The crossing must be a night attempt, while the snow is still frozen hard. There is no moon to show the way. The long line of more than a hundred coolies must pick their steps by the light of hand lamps. There are six miles of steep ascent. Coolies stumble with their loads; some sink exhausted in the snow; others fall asleep; almost all groan in piteous manner. By dawn we are on the summit. It is a white waste with here and there a dark projecting rock. Later in the season it will be gay with flowers: but in April it is a grim and silent wilderness, bleak, barren and bitterly cold.

It takes us twenty hours to put the Burzil behind us. We are then a horrible-looking party with red, swollen faces and bleeding lips. Some of us carry more lasting memories in the shape of frost-bitten finger tips and snow-blind eyes.

Then follows a journey of seven days to Gilgit, the half way house to the Pamirs. It takes us through varied mountain scenery. Some days we are in the midst of glorious pine forests, with troops of blue magpies sailing amongst the trees and pheasants sending their ringing whistles for miles along the leafy ranges. Another day we march along the bank of a torrent where dippers dive into the larger pools and redstarts alight on slippery boulders to catch the water insects cast up by the spray. Then again we are in rocky wastes, true deserts of fallen stones with here and there a green oasis marking the site of a village or a stream. The chief feature in the route
is the crossing of the Indus, which here looks like a slender silvery serpent winding its way through an enormous gorge. The river, which is to all appearances so diminutive and feeble, has in fact sawed a channel twenty thousand feet in depth across the highest part of the range.


Isolated peake, conifer streaked, rise like islands from the snow
At Gilgit we halt a few days to refresh ourselves. Then forward into the Karakoram ranges, the most forbidding part of the western Himalaya. The gorges are now deep, often dark and narrow. Our transport advances along sandy beds and in places, where the rivers are too narrow and unfordable, makes a deviation to the mountain side. Many a river has to be crossed. Spread out in long straggling line, the coolies are at one time waist-deep in water, at another trudging across sandy islets, at another clinging to some perilous-looking path a thousand feet above the bed of the gorge. The fording of the rivers is sometimes no light-hearted performance. In the early mornings the streams have little force. But the strengthening sun soon melts the snow-fields at their sources. Then they come down like roaring torrents and by midday are generally unfordable A late start in the day's journey means continuous apprehension. But our men are strong and experienced forders. They cross in batches, joining hands, supporting one another, and not seldom getting a severe ducking.

All around us in these gorges is brown barren rock. There is little or no vegetation on the cliffs. The beds of the defiles are deserts of stones, in places half blocked with fallen avalanches of rock. The scale is stupendous. Probably nowhere, even in the Himalaya itself, are there gorges of greater depth, profusion and magnitude than in this particular part of the Karakoram.

Some of the defiles are filled with glaciers. They How down from glaciated peaks that often show their icedraped shoulders at the heads of the lateral valleys. Their fissured, pinnacled, boulder-laden surfaces seldom show true icy brilliancy and whiteness. For dust and débris permeate their substance, giving them the color of the rocks that flank them. Sometimes where they end they are so black that they look more like coal than ice. Alongside them, like the lines of earth dug out from a canal, are the long moraines of broken rock which the ice-streams have brought down from their mountain sources and then piled up along their flanks. Sometimes these moraines stand in tiers, parallel lines that rise one above the other for hundreds of feet up the sides of the gorge. These tell us that the glaciers are now but
shrunken minintures of what were once far vaster streams.
It is troublesome when these glaciers hock the path. Getting loads across them is no easy task: with all their barrenness the glaciers often seem to be alive. We hear the grinding of the ice over its rocky bed, the splitting of some new crevasse, the toppling over of some pinnacle, the slipping of some boulder from its icy perch and its splash into a glacier pool. Ever-moving, ever-changing, the glacier goes forward like some creeping monster crushing everything before it.

Forty days after leaving Srinagar we find ourselves crossing the Mintaka Pass that leads to the Roof of the World. What a change! We not only pass from Indian into Chinese territory but, it seems, almost from one world to another. It is both a new landscape and a new people. Behind us are the deep gorges and brown vertical cliffs. We come out on a vast and more open upland at an average height of 13,000 feet.

We are taught at school that the Pamirs are a tableland. But anything more untable-like could hardly be imagined. True they form an elevated plateau, but it is a plateau crumpled into a mountain chaos. One gaze over it from a commanding height uproots forever the idea of a tableland. Interminable ranges; stupendous desolation; an uninhabited and uninhabitable sea of sum-mits-these are the impressions that grip the mind. One might imagine that at the making of the world the surplus was here piled into a shapeless heap.


Streams are foriled before sum-melted snow turns them into torrents
The part we are on is the Taghdumbash Pamir. Its summits stand in undulating array. Between them are wide valleys, flat and grass-covered, each with a swiftrunning stream. As the country changes, so does our transport. Our coolies now return to their Himalayan villages. We engage a herd of yaks, the lumbering cattle of High Asia, to carry us through this glaciated territory. We are not long in learning its distinctive features. They are not unlike those of Tibet. Empty spaces, shalecovered hills, tracts of loose and crumbling sand, cloudless skies, penetrating sunlight, low, monotonous vegetation, a scanty and nomadic human life.

Every valley tells its story of old glacial action. Tiers of moraines still flank the hillsides. Einormous boulders that had once been carried downward on icestreams now lie strewn along the valley beds or sit perched in odd places on the mountain sides. It has not been loug, geologically speaking, since the whole of these uplands were buried in ice, presenting the appearance of


The Karahoram rorgen are amoug the most forlidding in tur world
a white table such as we sec in the interior of (ireenland.
Our business in this comutry is scientific. We survey the territory, study the animals and plants, collect specimens of the rocks, keep records of the weather, investigate problems of mountain sickness. This work takes us from valley to valley and up many a glaciated peak. The ascents are not too difficult. Yaks often carry us half the way. Then comes the scrambling up more difficult rock, the trudging and slipping in soft snowfields, the puffings, heart-throbhings and thumping headaches that accompany exertion at the highest altitudes.

But it is not all work and no play. There is fine sport to be had on these hillsides. Herds of ibex live in almost every valley. We see them often on the racky slopes and hear the rattling falls of shale shot down by their neverslipping hoofs. But the sportsman's thoughts are directed mainly to the Pamir wild sheep.

This splendid species, the largest of the sheep, has its home on the Roof of the World. It is called Oeis poli after its discoverer Marco Polo, the Venetian explorer of the thirteenth century. The Ovis poli is the pride of Asiatic sportsmen. The remoteness of its haunts and shyness of its nature make it the rarest of exhibits in a gallery of trophies. Its corkscrew horns have been known to reach more than six feet in length. Scarcely ever coming lower than 13,000 feet, it likes the undulating grassy slopes, while the ibex keeps to more rocky ground. Morning and evening the herds descend to the pastures: during the day they no for safety to the higher slopes. No animal is more wary and difficult to approach: lor it is shy and suppicious to the last degree.


[^0]The experienced sportsman will wht Iry to approach these sheep from the valley. They have sentinels on points of vantage scanning minutely every object benealh them. He will try, if possible, to mome on them from the snow line, usually an ardhons and diflicult undertaking. Nor can he afford a haphazard shot. One crack of his rifle will empty the valley. It may take him a day's march and the crossing of a range tefore he again comes up with the lierd. Difty years ago these sheep were very aboudant. They browsed in all the Iamir vallegs. Now hory are found only in certain specially favored apols. We become aware of their existence, not so much by sceing them, as from the numbers of their horned skulls that ewerywhere strew the ground. It is mainly the Sarikoli hunters whe have decimated them. Their dogs single out a sheep from the herd, bring it to hay and hodd it to its gremol, white the hanter approaches stealthily and gets in a shot with his anliquated matrh. lock. The sportsman of today cannot mpect the splendid trophies that were once serurerl. The best heads our party lorought back had fifty-diree-inch horns.

The Pamir has smaller game for the less ambilious hunter. The Tibetan hare can he coursed with Surikoli houmds. It is more an ammsing than an exciting chase. A clumsily built yak can be made to gallop, but he will not carry one like a race horse. The sarikoli pack is made up of sheep dogs masquerading ns greyhounds.


The quarry, when hard pressed, dives into a burrow. Moreover, we are at an altitude of $1+, 000$ feet, where every exertion makes rider and steed pulf like blowing porpoises. If this chase proves too stremuous, there are snow cock on the mountains. These are a hind of partridge as large as a turkey. They tax the sportsman's powers of stalking to the uttermost. Aud what a delight when a brace or two is bagged! It is not only the joy of successlul achievement, but the expectation of a change in food from the eternal highland mutton.

The nomad people we are amongst are helpful and hospitable. Since they inhabit the Sarikol range they are called Sarikolis. Pale-faced, often much bronzed by high altitude winds, with narrow nose's and light-colored eyes, some of them might almost pass for Europeans. They differ much from the Kirghiz on the Russian Pamirs. These are a broader-headed and more yellowskinned people, with darker eyes and a more Mongolian cast of countenance. Essentially wanderers. the Sarikolis drive their herds from grazing ground to grazing


Sarikolis, though wind-bronzed, have pale skins and light eyes
ground, though some of them hold land at Tashkurghan. In summer they ascend to the higher elevations, following the new grass that springs up beside the rivers. In winter they withdraw to lower altitudes at about $\mathbf{1 0 , 0 0 0}$ feet.

Their home is the yurt, a dome-shaped structure, not unlike the old-fashioned bechive. A framework of sticks is first set up. This is covered with yak-hair carpets and a circular hole is left in the roof. Like the door of a beehive, an entrance near the ground leads into the spacious interior. Inside there are carpets spread on the ground and a yak-dung fire, the fumes of which escape through the hole in the roof. When the Sarikoli moves, he dismantles the structure, straps the framework and carpets to the saddles of his yaks and journeys off to some fresh pasture.

There is no cultivation on this part of the Pamirs. Even barley does not seem to grow, though I have seen it at 15,000 feet in Tibet. Only the rankest grasses are capable of existence. Nor are there any trees. We did not see even an arctic willow. Consequently the Sarikoli is hard pressed for fuel. He burns the roots of certain mountain herbs; but his great stand-by is the dung of his yaks. This, when dry, makes a good fuel but, when wet, gives off most nauseating fumes, and woe betide the careless cook who lets them taint his meats.

The tending of yaks and sheep is the life work of these people. Their flocks require continuous protection. Wolves are common on the mountains and a never-ceasing danger. By day a nomad must all the time keep, close to the flock, and at night he gathers them around


The nomad herdsmen live in yurts, which are casily transported
the yurt, where they are guarded by semidomesticated dogs. Compared with the Tibetans, these are a cleanly people. Their yurts are inviting and well-kept, very different from a Tibetan house with its filth. They are charming hosts. Often we sat in a yurt before a yakdung fire, eating chuppaties spread with cream and washing them down with delicious buttermilk. The Sarikolis would entertain us with their nomad politics or enliven us with a strum on a primitive banjo.

Nor did we lack visitors in these desolate surroundings. There was a doctor in our party, a rare visitor to the Pamirs. From all directions came the halt and maimed to consult him, sometimes more than a week's journey. One night our camp housed a motley crowd. Our own party in itself was very varied, comprising Englishmen, Baltis, Kashmiris, Hindustani Mohammedans and Gurkhas. Then we had Cossacks who came over from Russian territory, Kirghiz and Chinese from Turkistan and a number of Sarikoli nomads. It was this heterogeneous intermingling of peoples that told us we were at the meeting-place of the empires.

The yak was our mainstay. Without him we should have been helpless. Ourselves and our baggage he carried everywhere, over the plains, across the torrents, up


Yaks are to the highlanders of Asia what camels are to thr Arab
the steep mountain slopes. He is a splendid beast, with short legs, low quarters, warmly clad in long hair and lurnished with a bushy tail. Though heavy and lumbering, yet he is agility itself. Inc will carry anything that a horse can carry, climb almost anywhere that a goat can (limb) and cross a river with the ease of a hippopotamus. sure-footed as a mule, he trudges circumspectly over crumbling rock, knowing well how to distinguish a loose boulder from one that is firmly fixed. In snow a herd will not go forward aimlessly. Lach animal puts his hoofs into the footprints of his leader and, should he slip, cleverly depresses one shoulder which he uses as a prop to save him from falling. There is a shyness in the yak's nature: he will start at strange objects like a skittish horse. Nor does he lack cumning. Allow your mount to escape in the vicinity of a river. He will dash across it, gaze at you triumphantly and, when you make an attempt to reach him, will flounder back to the original bank. His stubbornness is mulelike when le is unwilling to move. He is a double-coated beast. Next the skin is an undergarment of matted wool and covering it an overcoat of long straight hairs. The overcoat often hangs like a skirt around his thighs, into the folds of which
he draws up his legs when lying down in a heavy wind. His huge tail serves him as a kind of wind-screen; when grazing, the herd always feeds with hind-quarters to the wind. The calves do not have the flowing overcoat. They are curly-haired, and we commonly see them near the yurt anchored by the necks to a long rope.

These yaks are only half domesticated. Their wild relatives live farther east on the Tibetan highlands. The Sarikoli does not feed them. They just pick up what they can, in summer stuffing themselves and growing fat, in winter living on the adipose accumulation and shrinking to an emaciated state. A herd feeding in spring is a surprising sight. You see a hillside brown and bare; there appears not a trace of green anywhere on it. Yet every yak has his nose to the ground and is obviously feeding on something. When you look closely, you find that he gets solitary shoots. In one spot he nips off a blade just peeping above the earth; then he goes forward four or five paces and finds another solitary blade. He never gets a mouthful; they are but the tiniest pickings, yet somehow they keep him alive.

What would these nomads do without their yak! His flesh gives them food; his milk, drink; his hair supplies them with ropes and carpets; his skin makes their boots and thongs; his living body moves them from place to place. Without the yak High Asia would be an uninhabited desert. The beast is to the high-altitude nomad what the camel is to the low-lying Arab.

We see much of the wild life in our various journeys. A friend that greets us in every valley is the golden marmot. From its burrow it hops out as soon as we approach, sits erect on its quarters like a teddy bear and welcomes us with sharp birdlike whistles. Its enemy is the brown bear, which digs it from the burrow, clawing up the soil with infinite patience until it gets its victim at the blind end. The little mouse-hare is another delightful companion. About the size of a guinea pig, it lives in communities which riddle the ground with innumerable tunnels. The community is seldom independent. A number of little birds-different kinds of mountain finches-join with the mouse-hares in a common society. The little birds run into the mouse-hares' burrows and pilfer the seeds that the mouse-hares happen to drop.


A yak, even when mounted, can cross the swiftest rivers with ease
But there is no retaliation, no quarreling. Bird and mammal live in perfect amity.

Twenty-four different kinds of birds manage to exist at these great heights. Amongst them is the chough,


Yak calves do not have the flowing overcoat of the adult beasts
which of all birds goes to the highest elevations. Farther to the east I have seen it following the Mount Everest climbers to their highest camp at 27,000 feet. There is little doubt that if they had reached the summit they would not have been entirely alone. Another highflyer is the bearded vulture or lammergeyer. This splendid bird spans more than six feet from wing-tip to wing-tip. At 23,000 feet it literally sails or floats, making immense circles miles in extent without the slightest movement of a wing. Though the supporting power of the air is at this height less than half what it is at sea level, yet the lammergeyer drifts in circles with all the effortless ease of the albatross.

Life's struggle is a hard one on these Asiatic highlands. We see its bitterness on every side. Yaks in summer have to store reserves which keep them alive during the winter fast. The sheep are more specially equipped for hoarding. They have broad tails capable of swelling and shrinking. In summer the tail fills with fat like a football with air, and the animal lives on it during the period of starvation. Husbandry and forethought are practised by the little mouse-hares. In summer they gather grass seeds into underground granaries. These they live on during the winter when the piled-up snow keeps them permanently underground.

What are the creatures that put up the best fight against high altitudes? One would never guess that the answer was "spiders." Yet it is these soft-bodied, rather unprotected creatures that have succeeded in establishing the highest permanent dwelling places. They are to be found on these Pamir summits, but farther east I have collected them at far greater heights. On Mount Everest, at 22,000 feet, small black spiders had a permanent habitation. No other animal or plant had made a home at such an altitude. Some, like the choughs, might make a higher temporary visit, but their real home was in the valley beneath. The spiders lived all the year round at this level, more than 2,000 feet above the highest plants. They are the highest permanent inhabitants of the earth.

For two months we had the opportunity of living on the Pamirs. It was a great relief to get back to more normal elevations. What a joy to see real trees once more! Nor were they trees in the ordinary sense. In reality they were only scraggy bushes, dwarfed willows growing in a Karakoram valley. Yet it gave us more delight to wander amongst them than it ever did to walk in the most lovely garden.


[^0]:    Some deliles are filled with elacior- Ilowing down from lefty prahs

