The Bakhtiari Mountains of South-West Persia.

By N. L. FALCON.

DURING a series of reconnaissance geological surveys in the mountain belt of S.W. Persia, I count myself fortunate in acquiring, in company with Dr. J. V. Harrison and Mr. A. H. Taitt, and in part with Dr. K. Washington-Gray, an intimate knowledge of the very fine mountains of Bakhtiari country (see small scale map). Our explorations [1] were carried out almost continuously from the summer of 1930 till the winter of 1932, and the whole of the mountainous region, before very inadequately mapped, has now been mapped geologically and topographically on the scale of $\frac{1}{4}$ inch to 1 mile. It is obviously impossible in a short article to give anything more than a brief account of this delightful country, such as will be of interest to the great brotherhood of mountaineers. There will be no space to refer to the accounts which earlier travellers have left behind them, but for the convenience of those interested a short bibliography is attached as an appendix. The attention of the reader is drawn, however, to the map of Bakhtiari country which accompanies the paper communicated by Dr. J. V. Harrison to the 'Geographical Journal' of September 1932. This, on a scale of 1 : 800,000, is the only general detailed map of the region which has yet been published.

Practically the whole of the Bakhtiari Mountains is enclosed between the Diz and Karun rivers, but the area around Malamir and the N.W. end of Kuh Mungasht, on the S.W. of the Karun, is also in Bakhtiari country.

The Bakhtiari Mountains are called after the nomadic Bakhtiari tribes which inhabit them. These people are a race of virile mountaineers whose main business in life is to follow the grass for pasturing their sheep and goats. They pass the winter and early spring in the lowlands and foothills, and then follow the grass up into the mountains as the snow melts away. Gradually, throughout the summer, they work their way northwards, crossing rivers and mountain ranges, until they reach their summer quarters 7000–9000 ft. up on the rolling plains at the edge of the Persian plateau. Then, in the autumn, this time more rapidly, they travel down to the lowlands again. This nomadic life is a hard one, and it goes without saying that the fittest survive. The infant mortality is high and the lot of the sick is unenviable, but the resulting physique of the adult is

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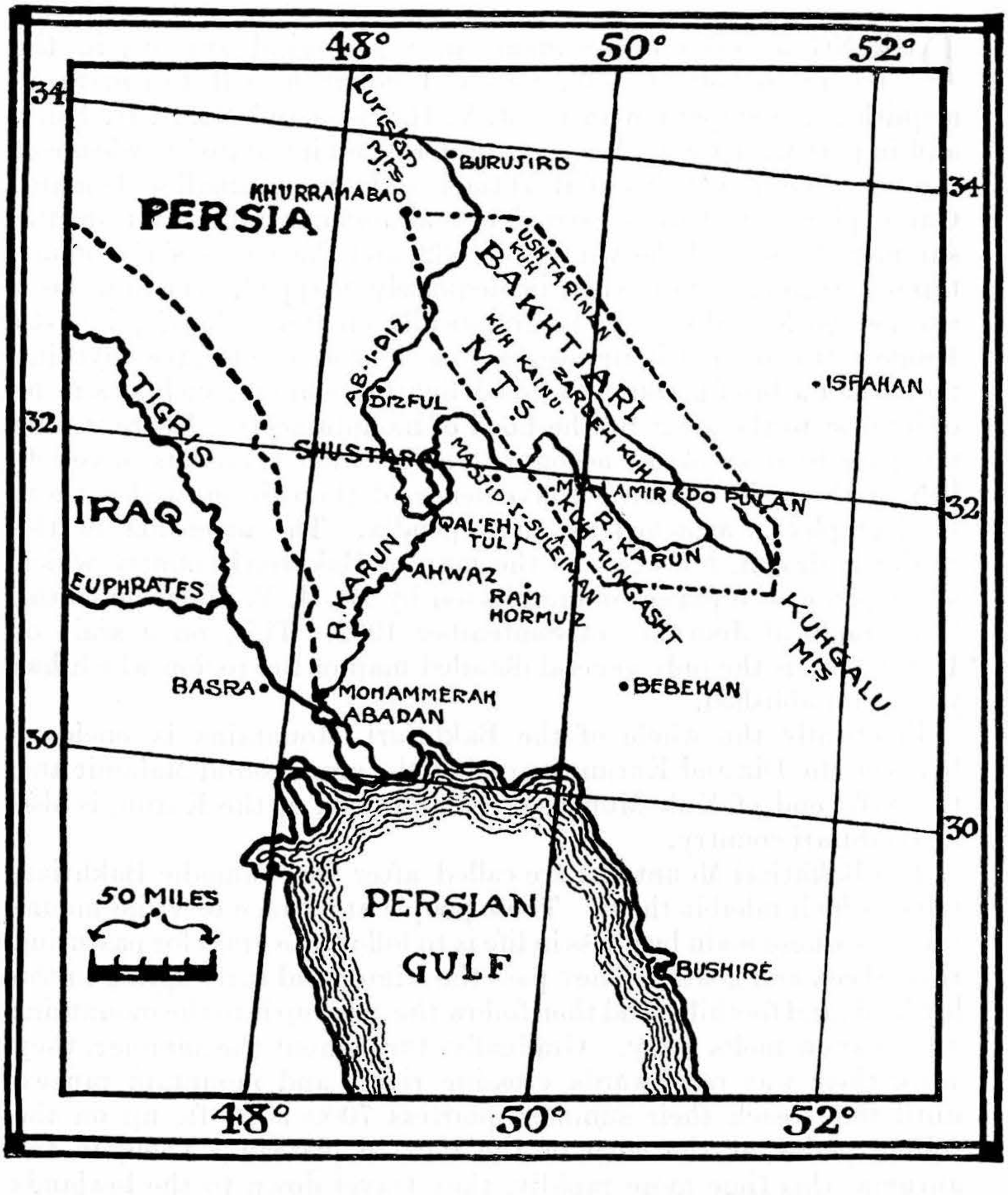
[1] These surveys were part of the extensive explorations undertaken by the Anglo-Persian Oil Co., and I am indebted to Sir John Cadman, the Chairman, and to the Directors of the Company for permission to make this communication.

generally good and frequently magnificent. They are a likeable people, easy for an Englishman to get on with, if for no other reason than a common sense of humour. They love their mountains and their free life and quickly show friendship to a stranger who does so



too. The population of the mountains is therefore mainly a migratory one, with the black goat-hair tents dotted here and there about the valleys and mountain slopes according to the season. When the tribes are on the move over the rough and frequently execrable paths, the mountains and valleys reverberate with the shouts of men, the braying of asses, the lowing of cattle, the barking of dogs and the bleating of goats and sheep. At other times only the wind whistles through the oak trees or over the bare and rocky mountain

Photo, N. L. Falcon.]

KUH-I-TIZ (11,000 FEET) FROM ABOUT 10,000 FEET ON KUH-I-ALGAND.

Kuh-i-tiz is part of the N.W. end of the great Zarden Kuh range which rises to 14,000 feet.
View taken in July, looking S.

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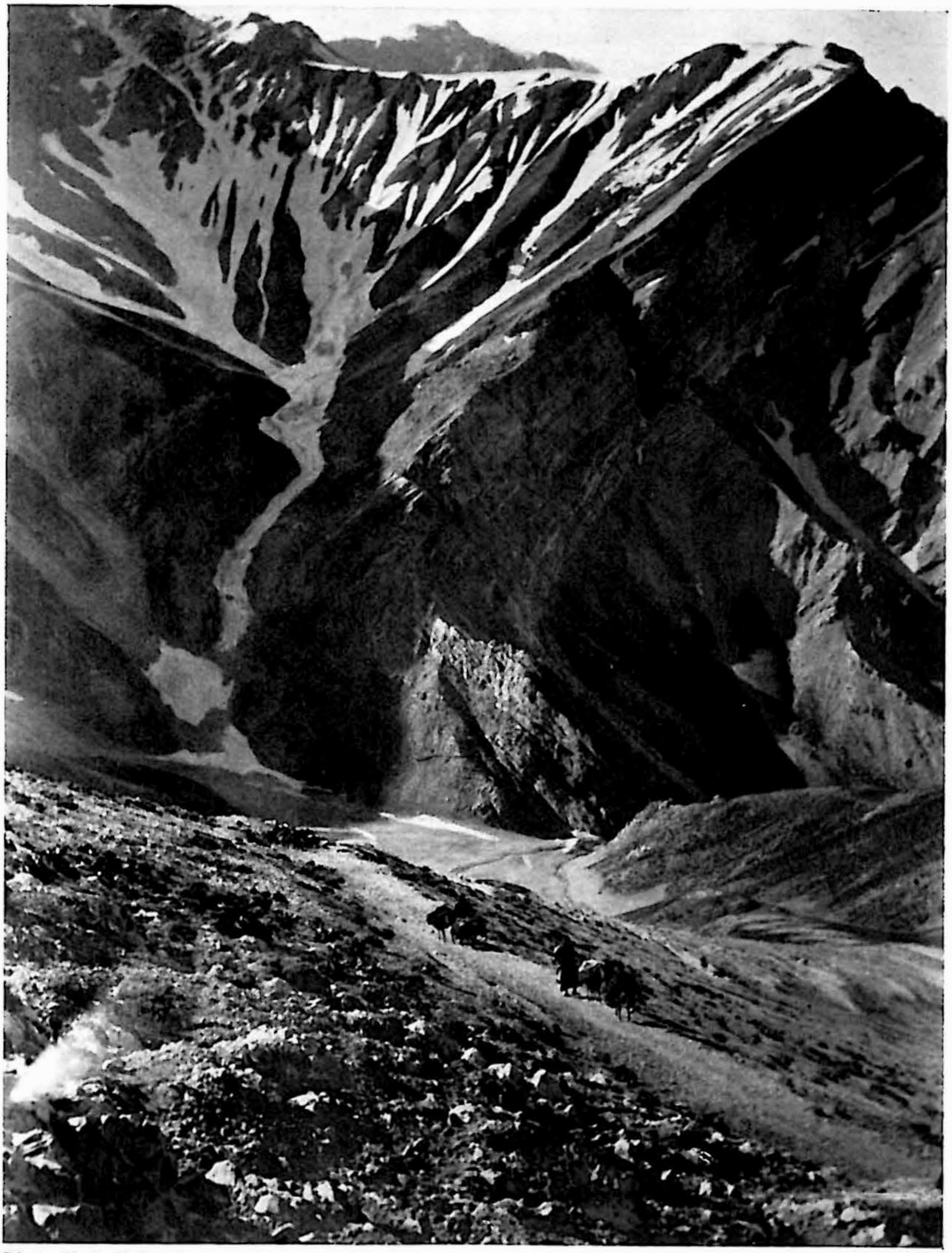

Photo, N. L. Falcon.]

THE S.W. SIDE OF GILLI SHAH.

A famous tribal pass over the Zardeh Kuh Range. The top of the pass is at 12,000 ft. and about 4000 ft. of ascent is visible in the photograph (note the path, an exceptionally good one, zig-zagging up in the lower right-hand corner). View taken late in June. Peak in background about 14,000 ft.

sides, or, in the still air, the rock partridge chuckles among the boulders, and an occasional stone, disturbed by some ibex or mountain sheep, drops from a precipice to disturb the peace of nature.

But dotted here and there in some of the more favoured valleys throughout the mountains are to be found little terraced villages clinging to the hill-sides. These are permanently inhabited. The villagers grow a little corn on terraces or such level ground as there may be, and keep a few flocks as well. They do not live in luxury; but even if the corn crop fails there is always acorn bread as a substitute. The Bakhtiari mountain villager is essentially a settled nomad, but with the nomad outlook and fine physique. His settlements are too small and his life too hard for the physical degeneration, so lamentably characteristic of many larger Persian centres, to have set in. May he long continue so.

He that would travel in Bakhtiaristan must take to the caravan of horse and mule and his own good feet. He should eschew the heavy and cumbersome nailed boot, except perhaps on snow, and should wear the local rag-soled shoe, the *giveh*. There are many types of *giveh*, some good, some bad, and choice is best settled by personal experience; if there is a rule, it is wear what the tribes wear. One can soon accustom oneself to the *giveh*, which is admirable footwear on the limestone rock predominating in the mountains. If he is the fortunate and proud possessor of a hard pair of feet, in a few days the traveller will be rattling down scree slopes in his *givehs*, able to keep up with the most adventurous shepherd boy, or so I have found. *Givehs* wear out quickly but are very easy on the feet. For another reason too, it is preferable to wear them.[2] When climbing in dangerous places it is obviously better for the whole party to be shod alike. There is then no danger of leading men into situations which may be difficult for them in their footgear, although easy for you in yours. Even on snow it is advisable, if you can, to follow this rule. The most considerate and thoughtful person cannot tell how his men's feet are feeling unless his own are being treated likewise.

It is not difficult to get into the mountains nowadays. Dizful, Shustar, Masjid-i-Suleiman and Ram Hormuz in the south, Khurramabad in the north-west and several places along the northern edge of Bakhtiaristan are accessible by motor, and from any of these places convenient tracks strike into the hills. To obtain permission from the authorities is another matter. We have been privileged travellers with the Persian Government and a large organization behind us. But the tribes are now disarmed, and as long as the Central Government maintains the authority it has achieved, there should be no real difficulty for those with tentage and

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[2] It has not been found practicable to fit tribal men with boots. Their feet are unaccustomed to them. In any case, except in winter on new snow, there is rarely any need to do so.

equipment and a little money to spend. If one can offer any advice to the seeker after permission, it is apply direct to the capital and not through local authorities.

As I have already remarked, we were privileged travellers, backed by the authority of the Persian Government and the means of a large organization. The size of our outfit was determined by its efficiency with relation to the work in hand. Only a very fortunate private individual could hope to emulate our organization, and it would therefore appear pointless to discuss it. We never lacked men or material and could usually give our whole attention to the actual business of exploration.

So much by way of a preamble before attempting to describe this fine country, its topography, climate, scenery and the kind of mountaineering exercise it affords.

To get a clear idea of the region as a whole we must start with the general arrangement of this part of Persia. There are three well-defined units, and it must be remarked at once, the grain of the country runs north-west and south-east. Remember this and you will never get lost even if your compass has crashed dizzily into the abyss. To the south-west lie the desert plain of the Persian Gulf and the foothills. The foothills, a characteristically dissected region of barren sandstone and gypsum, rising usually to something less then 400 ft., are attractive in their seasons (spring and winter) and have a peculiar beauty of their own but need not detain us here. They occupy that belt of country which lies between Shustar and Ram Hormuz and a line running north-west to south-east about thirty miles to the N.E. of Shustar. They are naked and barren in aspect and are probably best described by the adjective ' geological.' A man who had never heard of the science of geology would perceive the possibilities of that science when he first set eyes on the foothills. And when he had passed the north-west-south-east line running thirty miles N.E. of Shustar, where the limestone ranges heave their great bulk into the air, he would be almost bound to become a geologist in a small way himself, so plainly has Nature exposed her mysteries. For here is the mountain belt proper. This is about fifty miles wide and in general the ranges, varying in height from about 5000 to 14,000 ft., increase in altitude from south-west to north-east. Farther to the N.E., across the grain of the country, lies the Persian plateau. This is an elevated region with broad valleys and plains generally at a height from 6000 to 8000 ft., and with high mountains rising here and there about it. The change from the mountain belt, with its deep valleys and gorges and its narrow ridges and ranges, to the plateau is striking. The mountain belt is extremely dissected, juvenile topography where erosion is a powerful factor ; on the plateau there is no deep dissection and the topography is mature.

I will now stray no more from the mountain belt and will try to introduce it to readers so that they will be on as intimate terms as

possible. But first you must know its moods, for, if out of harmony with its climate, friendship is impossible.

If you are sufficiently mobile there is never any need to suffer unduly from heat or cold in the Bakhtiari Mountains. When the lower valleys and deep gorges, only about 3000 ft. above sea-level, are sweltering and blistering in a sun temperature of 180°(F.) and a shade temperature of 115°(F.) or thereabouts, it is always possible to find some well-watered elevated mountain plateau where the sun has lost something of its fierceness and cool breezes blow. When the mountains are in the grip of winter and snow lies to 5000 ft., the valleys below will be warm and comfortable with never more than a few degrees of frost. The climate is usually invigorating, and in the clear dry air, whether in winter or summer, one does not tire easily. Only occasionally in spring, when hot sunshine follows heavy rain, does an energy-sapping humidity pervade the air and it becomes temporarily wearisome to drag one tired foot after the other uphill. These are days for a tree and a book if you can afford the time.

From May to November, apart from an occasional thunderstorm, no rain is to be expected. From November to April rain may be expected at any time. But there is a cheerfulness about these rains. They usually do not last more than a day or two and the warm friendly sun will appear eventually to dry and cheer the most sodden and cheerless camp. Below 3000 ft. it rarely snows, indeed snow does not often descend below 5000 ft. for more than an hour or so. On the higher mountains snow is the usual mode of precipitation, except in spring or early summer. But the snowfall is variable, and may be less or more than usual and the snow-line may be lower or higher. Snow in the Bakhtiari Mountains is a topic of conversation. It is always doing what it has never, in living memory, done before. There is no permanent snow, no ice, and no relics of any former glaciation.

April and May is the thunderstorm period. A glorious time for those who like displays of Nature in her wilder moods. Storms gather rapidly with enormous towering anvil clouds, often of a sinister blackness. The lightning flickers incessantly and the thunder reverberates from mountain side to mountain side in one continuous roar. And the rain comes down in torrents, sweeping across the mountains before the wind like driven spray. A jolly time. But choose your camp sites with circumspection in April and May, for it is not everybody's idea of amusement to watch a sudden cataract descend a mountain side, carve out a new channel for itself, and create havoc in the privacies of one's tent.

From March to June is the most favourable time on the mountains. The lower valleys are then green and carpeted with flowers, poppies and anemones (red, white and mauve), tulips and crocuses, narcissus and grape hyacinth, buttercups and celandines and many other flowers. The oak trees are pale green with new leaves, and willows shine silvery in the sun. The hoopoo flits from tree to tree displaying

his crest, and the call of cuckoos fills the valleys. All birds sing, and up on the rocky mountain side the red-legged partridges hold agitated chuckling conferences. Pigs, snorting and snuffling under the oak trees, are more full of vitality than usual, when not sleeping (with one eye open) in some bed of leaves in a place in the sun. Ibex and mountain sheep roam the precipices and mountains, now grazing peacefully in some sheltered hollow, now sniffing the cool wind from some rocky eminence. The snow is in excellent condition, inviting long, exhilarating glissades. The higher slopes gradually turn green as the snow retreats, and unexpected flowers sprout here and there.

There are many Europeans in South Persia who think of the country as inevitably barren and characteristically treeless. This is untrue of the mountain belt where the migratory population is not sufficiently ruthless in its fuel demands to cause deforestation. Oak trees flourish between 3000 and 8000 ft., and are the most characteristic element of the flora. These are not large trees, rarely exceeding 40 ft. in height, but are very attractive and their shade is at times seductive. They can thrive in the most improbable places, growing happily on vertical limestone cliffs and on the tops of large boulders, with their flattened roots ramifying with and even completely filling the smallest cracks in the rock. Above 8000 ft. it is too cold for oak trees in winter. This is the treeless region but for occasional dark green cypresses, tall, ragged and splintered, of a type inevitably reminding one of the art of Arthur Rackham. The characteristic vegetation is here spiny, low prostrate whin bushes and villainous tall thistles vie with each other in piercing the shins of the invader with their sharp needles.

I find myself unconsciously dreading and continuously postponing a description of the mountains themselves. But there is a reason for this. My whole outlook on the mountains is geological and I fear that jargon will creep in. The topography bears such an intimate relation to the geological structure that it is too easy to dismiss the whole business in a few technical terms. In Bakhtiaristan it is often possible for the geologist to forecast topography by using his knowledge of structure, so orderly has been the working of nature. There is always a geological reason for the choice of a route up any peak.

The constant north-west-south-east grain of the country has a most important effect on the scenery. As all the rock ridges and ranges run in this direction the best views are always to be obtained looking approximately north-west or south-east, that is with the grain, except in gorges. Looking across the grain is frequently disappointing, for the almost level crests of ridge after ridge and range after range conceal the great dissection of the country. This is particularly so looking north-east at midday when shadows are almost absent.

There are several well-defined types of topographical unit which occur again and again and must be described. First there is the

whale-back mountain characteristic of the more south-westerly strip of the mountain belt. This is a great elongated limestone dome with deep valleys on either side of it. The bottom of the valleys may be 6000 ft. below the top of the dome. In its naked simplicity this is not a very thrilling type of mountain, although towering, almost vertical sides may have great attraction for the acrobat, but fortunately it is frequently complicated by erosion. Rivers cut right through such mountains, having as little respect for them as if they were so much cheese, flowing through precipitous gorges a mile or so deep, as grand or grander than the Canyon of Colorado. Or the whole crest of a mountain may be carved out, leaving an elliptical ring of vertical cliffs facing inwards. But the escarpment is the most characteristic topographical unit. Usually the steep, precipitous side faces S.W. and the more gently dipping slope N.E. These escarpments may be of considerable grandeur. Precipices a mile high are not uncommon and often the smooth limestone slabs of the gentler slope rear upwards for a similar distance at an angle of 70°. The crests of such ridges are exhilarating and airy places. The grandest cliff of all is on the Karun gorge, about twelve miles downstream from Do Pulan. As Harrison has written, 'this gorge is the profoundest in Bakhtiari land, as for a time it is walled by 8000 foot cliffs on the North and by 7000 foot rock slopes on the South.'

There are other ridges too, particularly in the N.W. of Bakhtiari land, like immense long canoes, bounded by steep cliffs on all sides. These are often difficult of access and, as they occasionally are made of conglomerate, that most treacherous of rocks, must be attacked with caution.

No account of the South Persian mountains is complete without mention of *tangs*, those narrow, crack-like defiles which scar the mountain sides and cut through ridges and ranges. They are a product of water erosion and bear silent witness to the relative rapidity of stream action compared with other types of sub-aerial erosion in the Persian climate. No one can fail to react to the romance of *tangs*. A *tang* scramble may entail vigorous exercise and difficult rock-climbing, or there may be an Ali Baba-like path on the pebbly stream bed winding between smooth, vertical limestone walls. Inevitably somebody bursts into song in a *tang* to enjoy the resonance and the echoes.

Everywhere good rock-climbing is to be had of all degrees of difficulty and length. The rock is practically all limestone, with only occasional ranges of conglomerate, and such variety as it offers is provided by its different attitudes, whether horizontal, inclined or vertical. There is no permanent snow in the Bakhtiari mountains. By the end of July or August all the snow has melted, except perhaps in a few cracks on the northern slopes. But in spring and early summer there is enough good snow to add interest to the higher summits, both in the ascent and descent. In the early morning it is

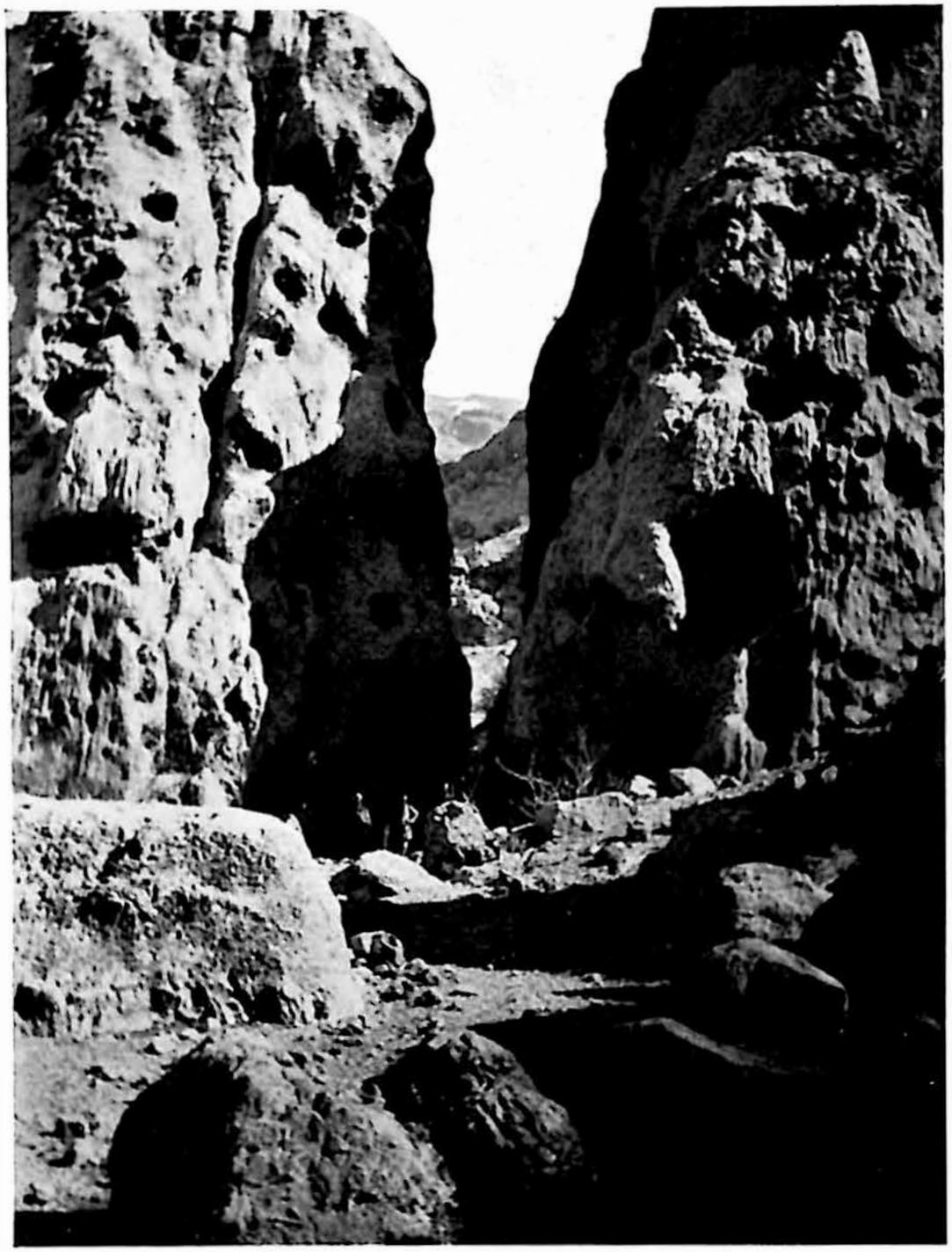
firm and crisp, but as the day draws on it soon reaches an admirably glissading consistency.

One must not forget the scree slopes. The delights of scree running can be indulged to the full in certain parts of Bakhtiaristan. Slopes of virgin scree occur, which plunge down temptingly for thousands of feet, disturbed only by ibex and an occasional hunter. The speeds one can achieve on them are almost incredible (in *givehs*, boots are too clumsy). But beware! At the bottom of almost every scree slope is a precipice, and it is annoying, after a glorious descent of 4000 ft., to find that the only thing to do, short of completely unjustifiable acrobatics, is to ascend again.

The main object of our expeditions being scientific exploration, it was not our habit to ascend peaks by the most difficult or interesting route. The shortest way up in time, consistent with reasonable security, was usually our choice. But coming down, particularly when the day's work was over and one knew definitely where camp was (camp usually moved when we had left it after breakfast), those bitten by the bug of rock-climbing could indulge their disease to their hearts' content.

It should be stated that we never used a rope, although many were the situations in which only a rope, properly used, could guarantee security. But we had our reasons for this which were justified by results. The Bakhtiaris, or many of them, are magnificent rock-climbers, accustomed to solitary climbing their whole life. They know their own powers and do not attempt things beyond them out of thoughtless bravado. A rope would have been an encumbrance to them, and would have destroyed their natural balance, which is superb. Most of our field men, who were of course picked for their performance on the hills, were accustomed to solitary climbing with a rifle and maybe a carcase, and had no difficulty in handling our not very heavy or cumbersome instruments. We never had an accident except for one slip on a snow slope, which fortunately did no damage except to the nerves of the man concerned. The Bakhtiari may trip and stumble at times on easy ground, but in dangerous places he does not make mistakes. I never heard of a climbing accident in Bakhtiaristan, except where animals were directly concerned.

Bakhtiaristan, especially in the north-west in the drainage basin of the Diz river, is extremely dissected. It is practically impossible in many places to do a day's travel of a few miles without numerous descents and ascents of thousands of feet. The mules had a thin time of it, and on one sad occasion two unfortunate animals without warning died of heart failure. Possibly the best way of illustrating the broken nature of the country is to mention the 1,000,000 odd vertical feet climbed by Harrison during the course of a year in the field. This is only an estimate, of course, but a tolerably accurate one, and, excluding days in camp, gives a daily average of 3500 ft. Taitt and myself when travelling from Sar-i-Pul to Pul-i-Hawa



Photo, N. L. Falcon.]

BARD-I-SURSU.

A typical *tang* or defile cutting across the grain of the country. The steep walls of the *tang* tower up for many hundreds of feet before widening out above. A main tribal track runs through this *tang*.

Photo, N. L. Falcon.]

PRECIPICE ON KUH-I-BERINJ.

View taken in April looking N.E. The high ridge in the distance is Ushtarinan Kuh (14,000 feet).

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Photo, N. L. Falcon.]

BAKHTIARI TRIBAL TENTS PERCHED ON A CLIFF EDGE AT ABOUT 9000 FEET IN THE MOUNTAINS AT MIDSUMMER.

The tents are made of a coarse fabric woven from goats' hair (not, as so many travellers have carelessly stated, made of goats' skin).

Photo, N. L. Falcon.]

TAKHT-I-SHAH (14,000 FEET).

Part of the great ridge that is Ushtarinan Kuh. This view was taken in June at about 12,000 feet and shows the S.W. face of the mountain.

climbed 45,000 ft. in nine days during a period when for various reasons, chiefly shortage of mule fodder, we were avoiding unnecessary exertion. One can only have the greatest admiration for our tribal bearers who did all that we did, and frequently more, carrying loads happily.

The Bakhtiari Mountains have left pleasant memories, not all of course peculiar to themselves. But many are quite characteristic. Hours spent on the edges of vast precipices with the great vultures, whose thoughts are always of death, wheeling by hopefully; the ferryings over swift and aerated rivers on crazy goat-skin rafts; the glorious, achingly cold bathes in snow water while the sun burns the skin (a peculiar dual sensation); quick glissades back to camp, or the leaping and joyful progress down a particularly enticing scree slope after many thousands of feet of grind; the sudden chases after bears, the wild dashes after pigs under the oak trees, the solemn and intent stalks after ibex and sheep; but best of all the wonderful feeling of perfect animal health.

Bakhtiaristan is a convenient country in that its most interesting ranges, from the climbing point of view, are the most readily accessible. Ushtarinan Kuh (14,200 ft.) towering over Galleh Gahr (Lake Irene) is a fine big ridge and not far, by motor, from Khurramabad and Burujird. The long Kuh-i-Shahan range at the S.W. edge of the plateau, and Zardeh Kuh, both of which rise to 14,000 ft., are also easily reached from the N.E. Approaching from the S.W. lies such an array of mountain ridges that it is difficult to pick out any of special interest, except perhaps Kuh Mungasht, easy to get at *via* Qal' eh Tul. Mungasht rises to nearly 11,500 ft. in the S.E., but the highest part of the mountain is not in Bakhtiari country.

The Bakhtiari Mountains have a lot to offer the mountain traveller.

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