So What Does Tomorrow Bring?

The Qaz-i-Deh, Noshaq, Mandaras regions are now well explored and few worthwhile lines remain. The short but very steep N faces of Daros would provide fine safe ice routes in good conditions, and, some of the peaks from Aspe Safed IV to Pt 5980m—an Argentière wall—still remain untrodden.

The answer lies in the Kohe-Zebak, a range eminently suitable for technical Alpine-style ascents. The Qalat Basin has now been thoroughly explored by the N of England and Manchester expeditions of 1975 and 1977 respectively, but to the E the scope is limitless. One could mention the magnificent NE face of Sad Ishtragh and the numerous possibilities on the N side of the Kalan wall above Syarpalas. The NW pillar of Kohe-Sakht was sieged in the summer of 1977 by a French team, but the true N face is an awesome sight: 1200m of near-vertical rock and ice-runnels—a real technical challenge.

The W faces of KZ46 and 50 and the N face of KZ20 offer aspects similar to the S face pillars of Mont Blanc, and the S side of the Kalan Wall, classic pillar and face climbs similar to the Envers side of the Chamonix Aiguilles. The latter is approached via the Wakhan Gol and to establish Base at the head of Gol would probably require a 3 day march from Qaz-i-Deh and thus great expense on porters, but would also allow attempts on the unclimbed summits and attractive ice-walls running along the Pakistan border from Jachi to Sad Ishtragh.

Approaching the Kohe Zebak from the N is a different matter as the terrain is easier and suitable for mules which can be hired relatively cheaply for the 2 day approach march from Eshkashim. The W part of the range is lower, less glaciated, still totally unexplored and perhaps best approached from Zebak.

September/October is later than the normal climbing season providing a passably warm day but a cold night; the rewards lie in the 30 consecutive days of perfect weather and the knowledge that one has the whole range to oneself.

Walking and climbing in Botswana

Tony Mills

Whilst no-one could pretend that Botswana is southern Africa's answer to Chamonix, it is not without a good number of fair-sized cliffs, more than enough to satisfy connoisseurs of the bizarre, latter-day Livingstones, politically liberated climbers who like their freedom in the hills to be absolute, stranded Alpinists and adjacent S African climbers in search of something different and new.

Botswana consists of a largely flat plain at an altitude of approximately 1000m, with some higher ground in the S and E parts of the country, reaching the dizzy heights of Otse Mountain 1489m high, 20km N of Lobatse. It has the virtue of being cool in the dry season and wet for a very short hot summer season. Botswana is a country the size of France of which perhaps 60% is the Kgalagadi Desert, a generally flat depression covered with delicate grasslands, not so delicate thorn trees and many naked salt pans around which animals may still be counted in their thousands. The people, however, are much less numerous, numbering little more than 500,000.

Hill walking is a considerable effort at all times of the year as all the hills are clad in a mantle of thorn scrub, which in September when the acacias bloom, smells wonderful, and in December is a picture as the Kalahari Christmas Trees deck themselves with their yellow and purple candles, but at all times of the year reduce one's clothing and skin to ragged tatters and impede one's progress in the finest traditions of Kipling's 'wait-a-bit-thorn-tree'. It is also usually hot. Views are seldom seen but treasured when they occur, and a traverse of the peaks of Otse Mountain is a worthwhile day. Pay a visit to the old manganese mine on the N flank above the picturesque village of Ranaka, and savour the views over the plain to the W, more hills towards Lobatse and S Africa, and the dams of Ranaka alive with waterfowl.

Another fine day is a traverse of Kgale Mountain, starting from the Gaborone end and then on over the main summit and along the ridge forming the cirque of hills which finishes adjacent to the main road, S of Kgale College. Do not expect a quiet walk as you will be challenged by baboons barking incessantly throughout the day, but the lucky may see kudu under the trees or even drinking from the natural rock cups near the summits.

A walk along the ridge of hills behind Moeding College, Otse Village, the Camphill Community at Rankoromane and finishing on the Mmanyelanong Cape Vulture Sanctuary, is full of interest of a geological and biological nature. It is on days like this that one is grateful for the solicitude of the grey lourie with its 'go-away-go-away' replacing the earnest entreaties of the red grouse of more familiar climes, and its concern for your apparent stupidity.

Further N the twin hills of Lentswe la Odi with their multitudes of baboons and view over the President's farm, and the impressive hulk of Modipane close to the S African border both yield pleasant days out, although the latter is difficult to approach even though it dominates the plain around the Mochudi area. Out of the environs of the large towns a pleasant day's walking is to be had in the Shoshong and Mokgware hills W and N of Mahalapye. This area may also have rock climbing potential. The Tchwapong hills E of Palapye around Moeng also give pleasant outings.

The greatest vertical interval and also the largest cliff to be found in Botswana is in the NW on the isolated Tsodilo Hills, famous for their many thousands of rock paintings of bushman origin. Mount Male stands 450m above the plain and its N face is 250m of rock. Although this author has so far only studied photographs, there should be a number of easier routes and one or 2 more of a standard compatible with the remainder of the routes currently existing in the country. There are 4 other hills in the group and several other sizeable cliffs, notably on Mt Female. However, care should be taken at all times not to damage the rock paintings.

The Tsodilo Hills as a climbing area also bring other problems, exhibited to a varying degree in all other areas of the country, those of remoteness and wilderness, the need for petrol, water and a strong vehicle, not necessarily four-wheeled drive. Given the will to climb, these problems will be overcome, but a party should consider that they are probably the only climbers in Botswana and that Tsodilo is 300km from the nearest hospital, petrol and town of any size.

For the rock climbing enthusiast prepared to make some effort, new route possibilities abound. Information on the whereabouts of cliffs can usually be obtained by asking the Department of Lands and Surveys, and the Curator of the

National Museum, Mr Alec Campbell, all of whom are most helpful in this. Of course the largest source of information is local knowledge and one could do worse than to drive into the bush and ask local villagers. Although the majority of routes will not exceed 60m, climbs of all standards can be found. All of these routes so far climbed are in the VS category although many easier routes exist and harder possibilities also remain.

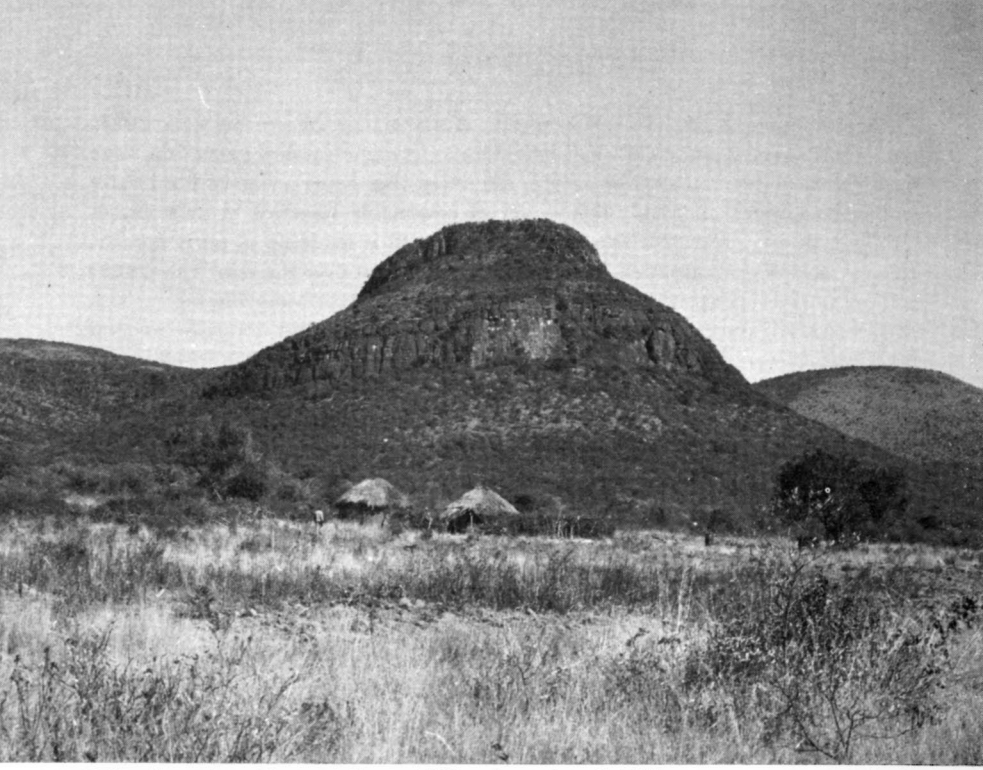
The greatest concentration of routes so far is on Kgale Mountain 5km from Gaborone. The rock is excellent granite with many wide cracks and narrow chimneys. There is much more rock than appears on first examination on the flanks of Cross Hill, whilst the summit buttress of the main hill gives nearly 90m of relatively uninterrupted climbing. Due to exfoliation the walls and slabs are very bare and any flakes which exist are of the flexible biscuit type with the fragility of potato crisps. Any possibilities which exist here will require considerable strength and boldness on the part of the leader. However, the cracks and chimneys are a gritstoner's delight, although many of the former are off-width and protectable only with Chouinard's giants.

The obvious groove in Gaborone Buttress (nearest to Gaborone) yields a disappointing severe called Urinary Tract, for obvious reasons, being well used by hyrax for that purpose. The middle section does yield some unusual climbing, and it is possible to do 2 more short pitches rightwards in order to reach the summit, Cameo Crack and Kudu Crack; the former, although short, is a delightful pitch.

On the other side of Cross Hill (second from Gaborone) will be seen a large boiler plate slab reaching the skyline. Level with this on the far right is an obvious slab with 2 cracks in it, the right-hand one Coxswain 45m VS being harder than the left, Two-Minute Crack 45m HS. These routes, as were most Kgale routes, were climbed with Ken Cox, a doughty bagger of Munros and African summits.

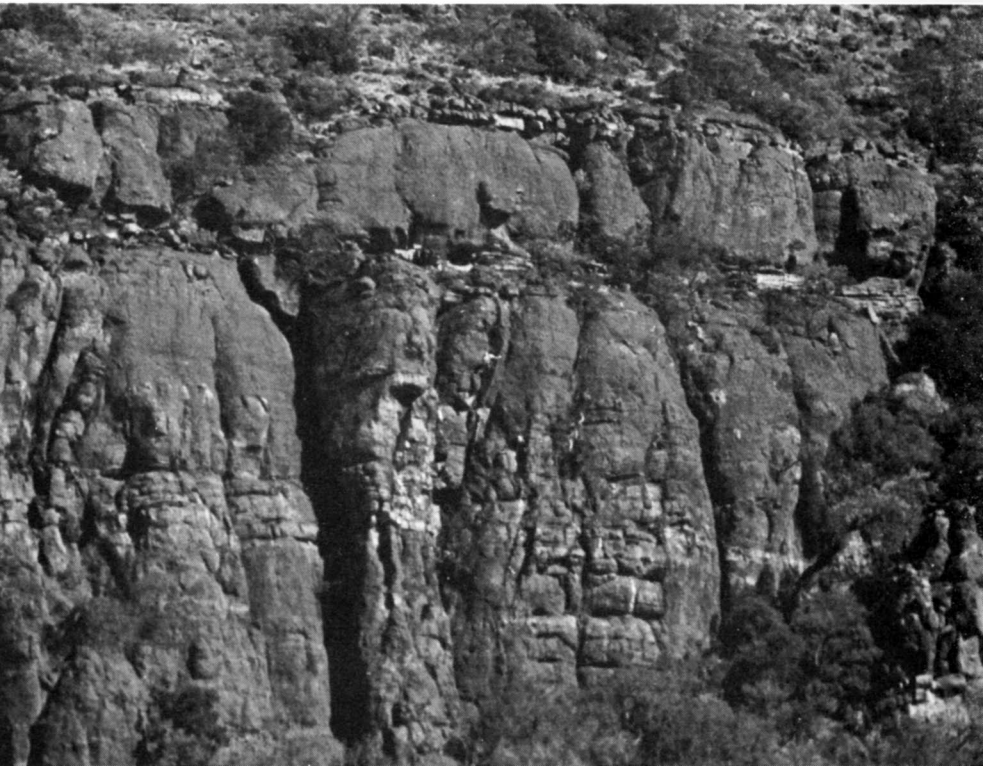
The best route in this area is Bowstring, 70m VS. Fairly low down will be seen 3 buttresses almost on top of each other, leading up to the summit slab. The lowest of these has a crack with an arrow-head shaped niche half-way up. (This is Arrow-Head Crack, as yet unclimbed, XS.) Just right of this is a narrow chimney with a tree in it. Bowstring goes up here then takes a short awkward crack on the left to arrive below a wall with 3 cracks in it. The left hand is wide and comes from the ground 45m Black Eagle Crack (also unclimbed as the eagles are still there). The right-hand crack is hard and short (30ft HVS) and is climbed by Quiver Route, the first pitch of which climbs a polished slab right of Bowstring pitch 1. Bowstring climbs the middle crack by jamming and bridging with awkward moves to exit at the top and an exposed traverse across the slab at the top. From a belay here easy climbing leads to the slab which was originally climbed on aid up a thin crack by Mills and Cox but is now climbed free up a delicate slab with a bulge at the top. This latter was the first pitch to be done with Tony Julianelle, a newly arrived American hard man and ultra-marathon runner. Also worth a mention here is Eyrie Chimney 45m VS climbed with Bob Tuppen at speed inspired by the dive-bombing black eagles whose eyrie was just next door.

On the main hill, little has been done yet, although many possibilities exist. Bender Crack, done with Neil Dunford, is a difficult 35m VS to the right of the main part of the buttress. So far all other energies have been directed at its near neighbour, Straight Corner, a magnificent 45 m clean-cut corner, very polished, certainly XS and as yet not completely climbed. Routes in this area will all finish with another pitch on the summit block.



15 Otse Mountain and Lentswe le Baratani (This and next photo: T. Mills)

16 Climbing on Lentswe le Baratani



Further afield 2 of the finest routes in Botswana so far are on Lentswe-le-Baratani (Lovers' Rock) a cliff of about 110m at its highest point, part of the Otse massif. It is a cliff of a strange nature, the lower 50m being a slab of Blackwater Sandstone covered in friable flakes, but of reasonable standard in most places although poorly protected. The top part of the cliff is made up of fairly regular, vertical, clean cut, bottomless grooves, but stepped out over the slab. The middle section however, consists of an intrusion of tuff, very compact, unprotectable, loose in its lower half and capped by overhangs into the grooves above. To cross this band is very difficult and has only been achieved once, in Lovers' Rock 105m HVS, which climbs the most obvious groove above the vulture lime in the central portion of the cliff. The middle pitch is very frightening and unprotected at present, although a bolt is probably justified. Probably the best route for one's equilibrium is Shady Lady by Julianelle and Mills which climbs the main corner on the left of the main section of the cliff. The second pitch is the right-hand and least likely looking of 3 crack possibilities and, although highly baboon-polished gives a superbly strenuous overhanging jam-crack of 20m with huge jugs, sinking jams and bomb-proof protection, to a belay on the edge of an enormous chockstone. The final pitch is an awkward outward leaning chimney which, although not as hard, excites similar feelings to the top pitch of The Grooves on Cyrn Las. In the gorge near the Chinese Gardens at Kanye are 2 routes one of which, Baboon Groove 35m VS, is recommended.

A number of cliffs so far discovered are as yet untouched; in particular those behind Rankoromane and at Mmanyelanong opposite Otse. Also the large gorge on the track past the Livingstone Hospital at Molepolole has potential.

Around Moeng and further towards the Limpopo at Martins Drift are numerous large cliffs, 2 only of which have routes. These lie in the valley above Mokokwane, and Lost Horizon 32m VS, on the cliff furthest up the valley was a fine effort by Julianelle. Near Balonong, on the Talana farms, Lion's Kop should yield routes and some of the Kopjes in the Selebi-Pikwe area could give a pleasant afternoon.

At the lower end of the Kloof in Molepolole is a buttress of sandstone called Execution Rock. A description of the first ascent of this is worth some space as it gives a good example of a day's climbing in Botswana.

Execution Rock rises 50m out of the stream and has been descended by many accused of witchcraft, but ascended by none until Ken Cox, David Gollifer and myself achieved this in March 1977. It is largely overhanging and has one central weakness, a crack starting at half height. The lower part of the crag is guarded by a series of overhangs preventing access to this crack.

On our first attempt I used too much aid on the bottom section and reached an impasse underneath the last overhang by some nests of horrible hornets which proceeded to attack me, causing instant retreat in disarray abandoning equipment wholesale.

On the second attempt we employed such techniques as shooting hornets' nests with airguns (an improvement on Whillans's technique on Carnivore). Using only 2 points of aid up to the overhang, I led with a quick left hook from a can of insecticide, and the hornets emulated the witches. These techniques, neither of which is to be found in Blackshaw, carried the day and I completed the pitch, HVS, with 2 pegs for aid, a hand traverse, some delicate slab work and a pull through the final overhang.

The climbing eased off after this but a short holdless corner gave a strenuous mantelshelf. The route was not finished yet, however. I received more cardiac exercise and a 6m fall when all my nightmares came true at the glimpse of a long scaly green body on a ledge which, too late I realized, had legs. This is the crux of any expedition here, to this author, for I unashamedly admit to being snakophobic (with some cause as snakes are very common) and never go even to the garage without my little red box of faith, 'Fitzsimmons Vintage Serum'.

Upon my return to the high point recently vacated, the monitor (for such it proved to be) about 3ft long, did not move a muscle, but the hornets whose hole he was watching attacked the hand (mine) that jammed itself in there, nearly precipitating another departure on my part, but I employed the insecticide to great effect once more and finished the route rapidly with some delightful bridging. We called the route Doom, as that was the name of the insecticide, and it seemed somehow appropriate!

The whole proceedings had been observed with incomprehension by a local elder who, having informed us that we should walk up around the back, sat down to watch the fools at play and within half an hour was telling us that we were climbing the wrong crack! He declined however, our offer to follow.

So who is insane? Since completing this article the pace has quickened with the arrival of another accessible climber—Roger Frerey. Routes are now being put up at one or 2 a week, including additions on Lovers' Rock and the opening up of some new cliffs around Lentswe-le-Tau. I will be happy to provide full details on request to anybody else who is interested in visiting the area.

Mountaineering ropes

Brian J. Dunn C. Eng., M.I. Mech. E., F.I. Plant E.*

The invention and development of man-made fibres

The concept of a man-made fibre is not new. Robert Hooke FRS in his book '*Micrographia*' published in 1665[3] postulated such a fibre. Insects such as the silkworm and spiders naturally perform an extrusion process. Indeed the spider carries the analogy even further, since it can produce different silks to perform specific functions. The synthetic fibre industry has learned to produce fibres with similar characteristics, but has yet to match the spider in producing such a range from a set of common amino acids.

Clearly, although the theory was propounded by Robert Hooke et al., the practice could not be realized with the technology then available. Imitation of the fibres found in nature was beyond the reach of man until the scientific and industrial developments of the 19th Century. Even then, the chemical knowledge did not permit the synthesis of man-made fibre materials, and so these early attempts turned on making fibres from converted natural products. These first fibres were obtained by dissolving natural cellulose and creating the fibre by extruding the dissolved cellulose into a coagulating bath where it reformed itself into a fibre.

* Mr Dunn is Chief Physicist of Bridon Fibres and Plastics Ltd., the makers of Viking Climbing Ropes. Our thanks also to Mr Alan Birkmyre, Market Manager—Leisure Products, of the same company, who organized the preparation of the article.