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Addresses

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126 Albert Street, London NW1 7NF
Compaid (Robin Nixon)
Seven Springs Cheshire Home, Pembury Road, Tunbridge Wells TN2 4NB
Disabled Living Foundation
380-4 Harrow Road, London W9 8N5
Joint Committee on Mobility for the Disabled
9 Moss Close, Pinner, Middx HA5 3AY
Microtext Transdata Ltd, Microelectronic Systems Division,
11 South Street, Havant, Hants PO9 1BU
MicroAid Centre
Aylesbury Day Centre, London SE17 2BA
OT MicroNews (edited by Janet Brown)
Education Department, College of Occupational Therapists, 20 Rede Place (off Chepstow Place), London W2 4TU
Queenswood Scientific Ltd
The Paddock, Stubbington, Fareham, Hants PO14 3NS
REMAP (Rehabilitation Engineering Movement Panels)
25 Mortimer Street, London W1N 8AB
Royal Association for Disability and Rehabilitation
25 Mortimer Street, London W1N 8AB
SEQUEL (charity concerned with electronic and electrical equipment)
27 Thames House, 140 Battersea Park Road, London SW11
Specialised Switches Ltd (Mr R Potter)
58 Saxilby Road, Sterton-on-Stow, Lincoln LN1 2AB

Personal Paper

Kilimanjaro expedition

A R GREEN

The aim of the expedition was to make a documentary film about the ecology of Mount Kilimanjaro. It would mean six weeks' trekking over the mountain including several days' camping in the volcanic crater just below the 19 340 foot summit. Was I interested in acting as the expedition doctor? Even as I reached for my atlas to clarify my rather hazy concepts of east African geography there was little doubt about the answer.

Thus began a series of events that ended with a jarring Land Rover ride as we skirted the south western margins of the mountain before we climbed up through the belt of forest that girdles the lower slopes, and finally emerged on to the savannah and moorland of the Shira plateau. There the canvas hamlet that was to be our base camp nestled in a shallow gully amid the heather.

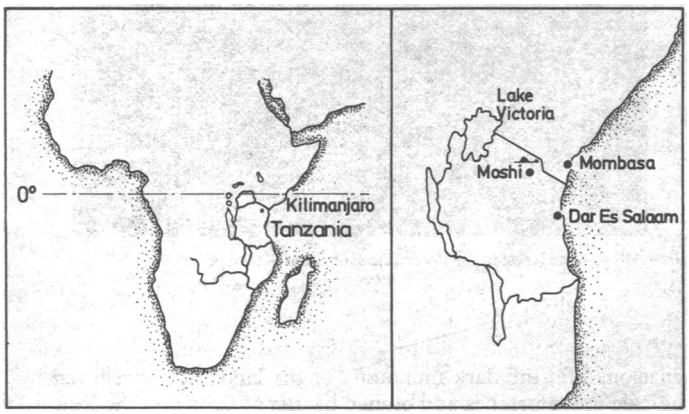

FIG 1—Map of Africa and Tanzania. (From *Kilimanjaro* by John Reader, published by Elm Tree Books.)

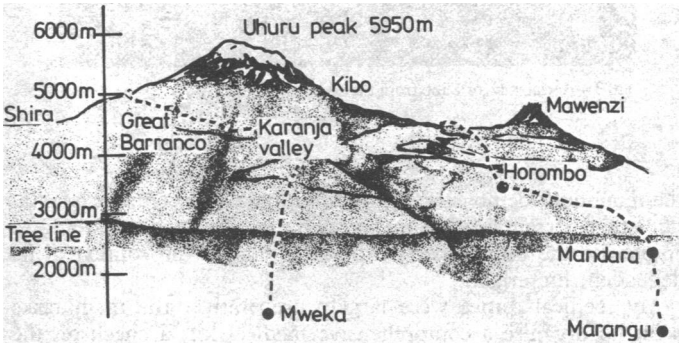

FIG 2—Diagram of the Kilimanjaro complex viewed from the south. (From *Kilimanjaro* by John Reader, published by Elm Tree books.)

The Shira plateau comprises the western shoulder of the Kilimanjaro complex, the ice capped central mass of Kibo separating it from the higher shoulder of the Saddle, which in turn rises to form the jagged secondary peak of Mawenzi at its eastern margin. As befits its status as the highest mountain in Africa, Kilimanjaro plays a dominant and vital part in the ecology of the whole region by virtue of the plentiful streams that radiate from it. These are largely supplied by the rain that falls on the lower slopes as a result of the upward diversion of the prevailing trade winds. Little rain falls on the upper reaches, the summit receiving only 12·5 cm a year, and melt water accounts for only a small proportion of the water produced by the mountain. Its height and

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its position within 3° of the equator account for many of the unique features of Kilimanjaro and in particular for its astonishing variety of habitats. A descent of the mountain has been likened to a journey from polar regions to the forests of the equator, and has also been used as a metaphor for the evolution of life, with increasingly complex ecosystems culminating in man and his cultivation of the lower slopes. Our task was to record the physical and biological phenomena of the different ecozones on and around

FIG 3—Aerial view of Kibo from the south east.

the mountain, demonstrating the multiplicity of complex adaptations that permit survival under such extreme conditions, and to emphasise the importance of the mountain in the context of its dependent hinterland.

My medical duties were largely preparative, the main tasks being to organise a comprehensive medical kit, a check on the vaccinations and malaria prophylaxis recommended for the area, together with a certain amount of reading around potential hazards. Predictably, the major problem experienced by most of the group was mild altitude sickness presenting with headaches and to a less extent nausea. Fortunately, the spectres of pulmonary and cerebral oedema did not materialise. Lacerations, travellers' diarrhoea, blisters, sunburn, and earache provided almost all the remaining hurdles, and so I was able to function as a spare pair of hands as well as having plenty of time to absorb the unparalleled scenery.

Dense, festooned with lianas, dark and fetid with rotting vegetation, the forest of the lower slopes reflects the proximity of the equator. At its edges and in glades where the sun can penetrate the gloom an infinite variety of greens contrast and merge. When swathed in cloud such subtleties of colour are muted, but the mists are pierced by vivid floral beacons that glow between the lichen bearded and ethereal trees. Although by day the forest echoes with the polyglot hubbub of a multitude of birds accompanied by the occasional crash of monkeys, after dusk only the unworldly shrieks of hyrax interrupt the symphony of insects.

Olive green footballs

As you ascend, the forest thins and eventually gives way to a moorland studded with dry grass, heather, and rocks. In the jagged ravines that gouge the southern aspect of the mountain, giant groundsels stand up to 10 feet high, resembling bizarre palm trees with fronds of oversized cabbage leaves. At their feet the succulent rosettes of lobelia are dotted around the ground like so many olive green footballs. To the east, below Mawenzi, large areas had been destroyed by fire in the month before we passed through, but vivid green shoots of young grass, their tips singed amber, emphasised the black scorched earth and gave evidence of irrepressible regeneration. In certain areas above 12 000 feet the equatorial alpine climate and local soil conditions combine to produce a process known as solifluction; the nocturnal freezing of water present in the upper layers of the ground results in the growth of fine needles of ice that force their way upwards to produce a glistening fakir's bed, newly formed each morning. Eland and buffalo unobtrusively roam the moorland, and the frequent leopard and lion spoor make nocturnal calls of nature challenging for reasons other than the bitter cold.

Above 14 000 feet the heather is left behind and you enter a world that becomes increasingly windswept, barren, and boulder strewn with outcrops of black lava snaking across a lunar landscape. This alpine desert zone is characterised by glimpses of

FIG 4—The forest of the lower slopes at about 9000 feet.

tenacious life; the dark monotony of the landscape is relieved by the pale green patches and orange beards of lichen on the leeward aspect of the rocks, with occasional tufts of dry grass in sheltered nooks. A few insects and small spiders, largely provisioned by wind blown vegetation constitute the residential animal life.

Increasingly steep scree slopes flow interminably up to the distant crater rim, guarded to the south and west by immense buttresses of carelessly stacked stone blocks. The summit zone lacks macroscopic resident life but has an overwhelming physical

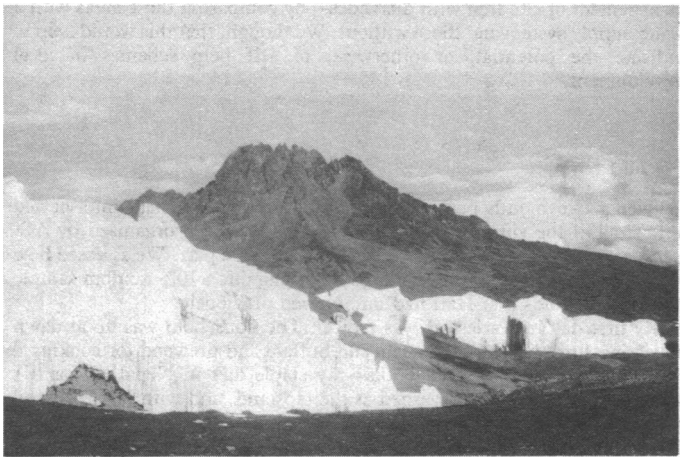

FIG 5—View from the inner cone with Mawenzi in the distance and the northern glaciers in the foreground.

grandeur. The volcanic crater that surmounts Kibo has a fragmented outer rim breeched at intervals by glacial masses that spill over to form the icy tongues that give Kibo its local name—the Piebald One. Within the rim there exists a desert of pumice, the aridity of which is emphasised by the ice cliff of the Furtwangler glacier with its curtain of 20 foot icicles, by the frozen terraces rising to the vaulted ice cathedral of the northern glaciers, and by the two storey knife edged slices that extend from the western Penck glaciers. Snowfields also dot the Saharan landscape, but no ordinary snow, for each field consists of serried ranks of frozen blades up to 18 inches high—the *nièves pénitantes*. It has been suggested that the angle of their tilt together with the direction of their parallel crests is dictated by the invariant arc of the equatorial sun. Towards the centre of the summit the volcanic scree slopes gradually upwards to form the rim of the inner cone, a secondary crater over 900 yards in diameter, the internal walls of which are decorated by yellow deposits of pure sulphur, each surrounding a gently smoking vent. Finally, within the inner cone, the pumice floor rises to a concentric smaller rim that surrounds the precipitous depths of the Ash Pit—and here at last you stand in awe above the ancient cataclysmic heart of Kibo.

After five weeks on the mountain we left our Chaga guides and porters and, having descended through the fertile belt of agriculture, drove out into the stifling dust and searing heat of the surrounding plains. There among the Masai and the plentiful big game, both dependent on sparse water holes, the importance of Kilimanjaro was underlined. In the words of the Masai, "it harvests the rains."

My Student Elective

Effects of a water supply system on local health attitudes in Nepal*

RODERIC L CLARK

My sodden feet squelched miserably as I leant against the mud wall of the tea shop. The wooden bench was hard and unyielding and the tea tasted earthy; it was thick with sugar. Children played cheerfully beside the open fire at the other side of the room and I watched lazily, bleary eyed. The younger child had impetigo; there were honeyed crusty plaques across his face, decorated with flies which buzzed incessantly. Smoke drifted around the room, spiralling as it escaped through the single door to merge with the mist and drizzle.

Nepal. Several weeks earlier the word had only conjured visions of hippies and drugs. It is a delightful country, however, with stupendous scenery and a delightful variety of people. In the south there is the hot, humid Terai, then there are the Middle Hills, and in the north the bleak, cold, beautiful Himalayan slopes. The people may be broadly grouped as either Indian or Tibetan, but there are dozens of ethnic groups, and I was to live among the Brahmins and Thamangs in the Middle Hills south of Kathmandu.

At that moment, however, I was gently steaming in a tea shop. My brother, Alan Clark, and I were on our way to Karleswar, walking the 15 km from Lele, which is the nearest road head. Karleswar, a political unit or panchayat, is 30 km south west of Kathmandu and consists of nine political subunits or wards and encompasses six villages. These villages are spread out over four ridges and three valleys. The terrain is exceedingly steep, dropping several hundred metres from one ridge to the next. The slopes are cultivated with an impressive array of terraces.

*The fieldwork was carried out by Alan R Clark.

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Water supply system

Alan Clark had been living in Karleswar for nearly two years, working with Volunteer Service Overseas and building piped water supply systems. The scheme was organised on the community self help approach and comprised two major systems. The first was built along one of the ridges during 1981-2 and the second on a parallel ridge during 1982-3.

The two water supply systems derive water from small dams built upstream. Pipes from these dams run downwards, away from the rivers, feeding water by gravity into large reservoir tanks on each ridge. Both water supply systems then have a single main pipe running down along the top of each ridge from which numerous side pipes branch off; these side pipes supply between one and three tapstands. Tanks functioning as sedimentation and break pressure units are interposed along the main pipe to prevent blockage of the pipe by silt and excessive hydrostatic pressure. The system built during 1982-3 is more than twice the size of the first