

USF - Tampa **PRONTO**



ILLiad TN: 814010

Journal Title: Natural history, NY

Volume: 74.

Issue: 3

Month/Year: 1965

Pages: 14-21

Article Author:

Article Title: Heritage of survival: Kofyar
terraces preserve soil and water

RESERVE?:

metalib.com:AIO_NEW (Via SFX)

Class: ,

Call #: QH1 .N28

Location: per--film

Item #:

For Patron:

Hose,Linda
lhose@usf.edu

Transaction Details/Notes:

9pp



HILL HOMESTEAD rises above terraces of varying sizes. Palm trees are of economic importance to the farmers.

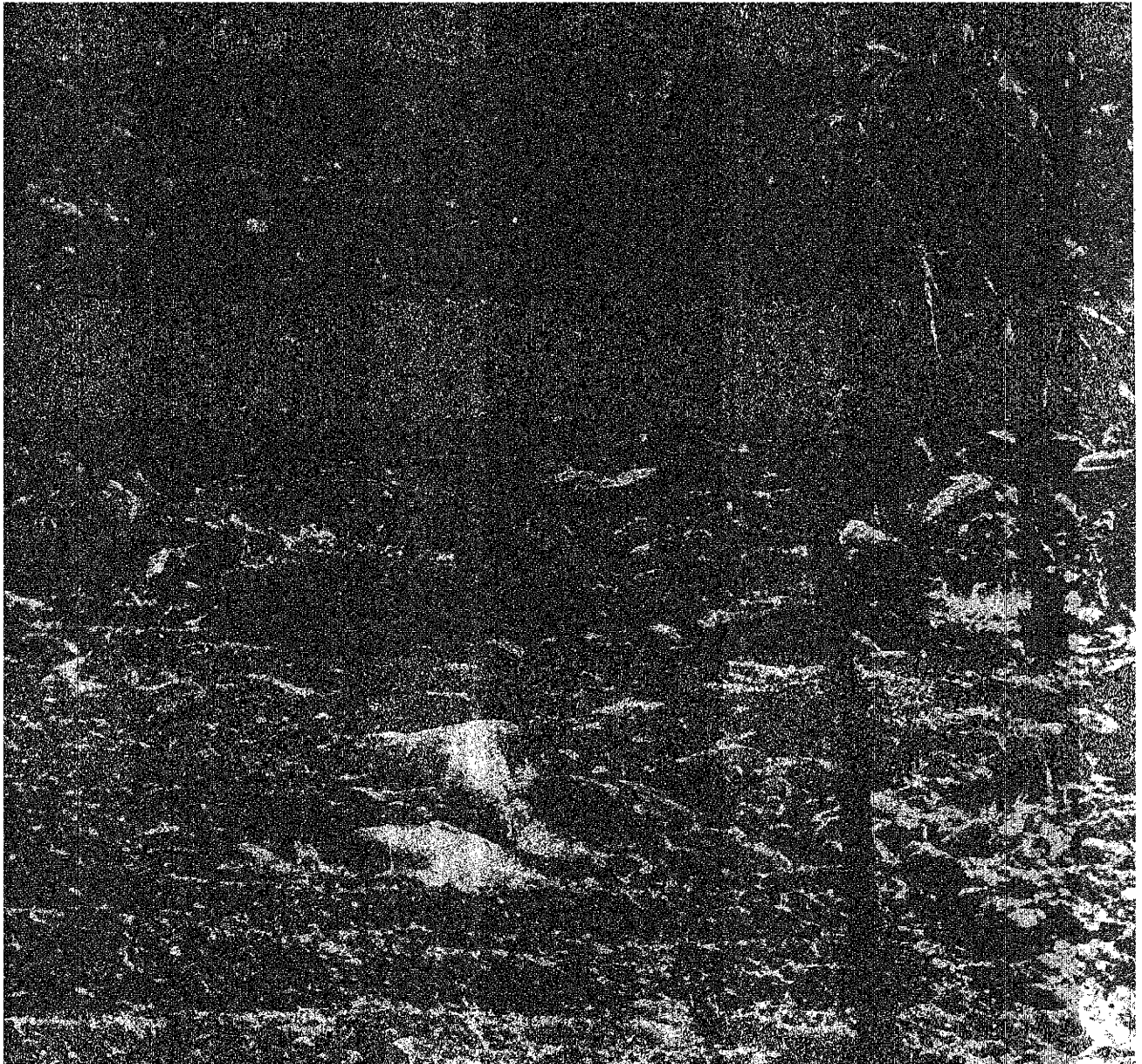
USING ANCIENT TOOLS, Kofyar hoe the earth into ridges with hollows at the center, where rain is caught and held.

Heritage of Survival

Kofyar terraces preserve soil and water

By ROBERT M. NETTING





POPLE who live in mountainous country tend to be hardy and independent. Their cultures are frequently the isolated and conservative backwaters of more fruitful lowland civilizations. To the outsider, hill folk often seem clammy and suspicious, preferring with unaccountable pride their impoverished fields to greener and more accessible pastures elsewhere. On the slopes of the Jos Plateau in the Northern Province of Nigeria, there are peoples with a similar heritage of resistance to conquest and a rugged insistence on cultural individuality. But their tiny territories, instead of being depressed areas, support some of the most intensive and ingenious agriculture south of the Sahara. These people have been condescendingly called "hill pagans" by the Muslim

Hausa-Fulani, the dominant ethnic group of the northern region, and by the former British administration. But in fact, these groups display creativity of a high order in their adaptation to a restrictive environment.

The Jos Plateau rises precipitously from the plain and contrasts sharply with the surrounding savanna country and the monotonous palm-bush area farther to the south. An escarpment rises 1,500 to 2,000 feet along the southern edge of the boot-shaped plateau, and its slopes are punctuated with volcanic cones and craters, swift clear streams, and scattered patches of deep green oil palms. At the top, cool, rolling grasslands remind American travelers of the Great Plains in the United States.

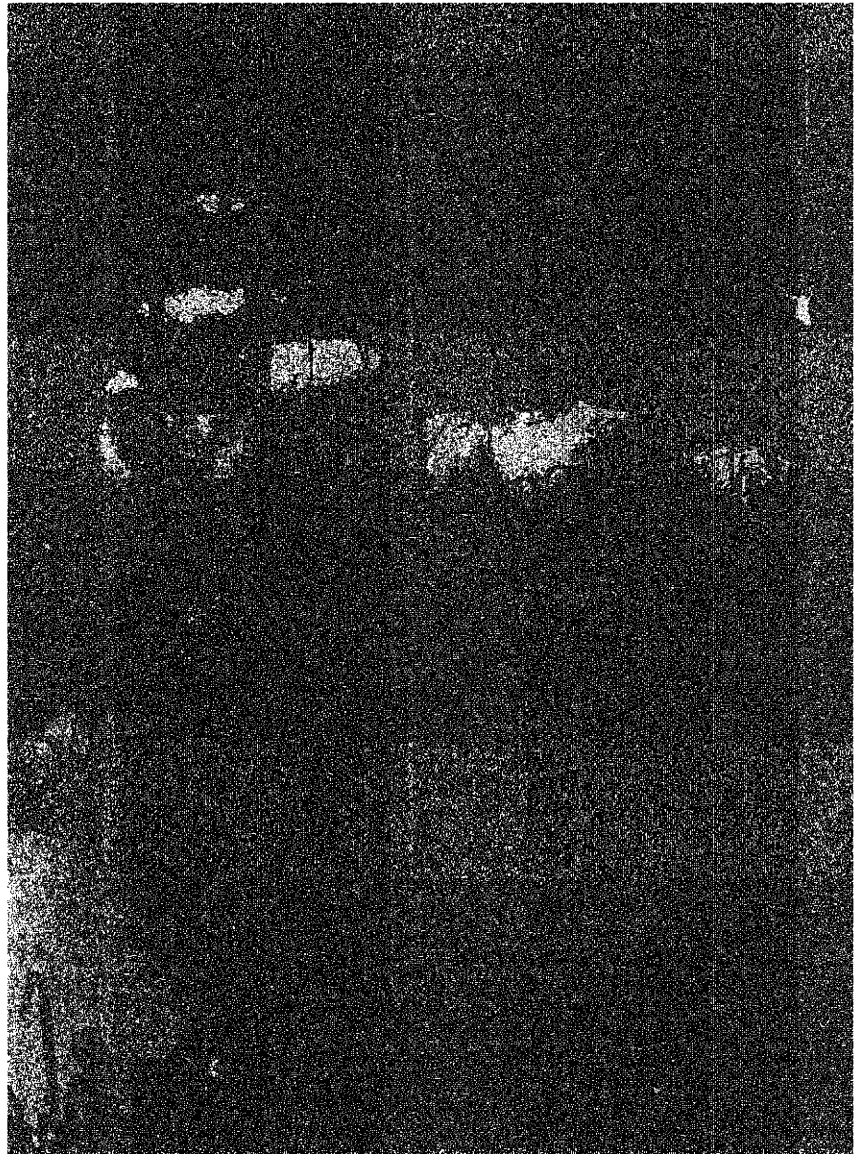
It was the unique geography of the area that led Europeans to the plateau near the turn of the century, first to mine the alluvial tin, which exists there in important quantities, and later to take advantage of the pleasant climate for vacations from administrative and business duties in other parts of Nigeria. The special qualities of the terrain and certain of the natural resources had long before been perceived and used by peoples who had settled the plateau and developed ways of life that are in some respects unique in tropical Africa. Within seventy-five miles of the great mining dredges and the lively commercial city of Jos are some thirty population groupings, many of them still poorly defined, speaking languages of two major linguistic families and main-

luring a striking range of costume, religious practice, technology, and social organization.

Especially in the broken terrain on the edge of the plateau, tribal areas and communities are small and varied. Long ridges stretch south like buttresses from the main body of the plateau, and each has its own cultural group. Just as Appalachian mountaineers in isolated coves developed local differences in song and crafts, the plateau hill folk over a much longer period, have remained in self-sufficient pockets and have gradually diverged from each other. Preserved from conquest and accompanying cultural change by their rocky uplands, and kept apart from each other by natural barriers and mutual hostility, the hill dwellers form enclaves of from 3,500 to 80,000. Of these, the largest and best-known groups are the Birom, Angas, and Sure. They were never incorporated by the Hausa-Fulani kingdoms, as they expanded into areas north, east, and west of the plateau during the nineteenth century. The rocky hills also shielded their inhabitants from mounted Moslem slave raiders who systematically harried other pagan tribes.

My own anthropological field experience in this area was mostly with a group that may be called, for the sake of convenience, the Kofyar. For the most part they acknowledge no such general title themselves, having no traditional political unit larger than a village or village area (such as Mrogiam, Dammuk, Kwong, Kawalla, and Doka), and no paramount chief or tribal organization. They do have strong similarities in dialect and custom, however, and trace a myth of origin from an ancestor, Kofyar. This man, it is said, survived a primordial cataclysm by taking shelter in a cave with his sister. Offspring of these two repopulated the area and migrated from the original hill village, which is still known as Kofyar (or Kofyar). For governmental and judicial purposes, several of the constituent village areas have been officially united as the Kofyar Federation and the rest have been invited to join. Yet to this day, individuals will identify themselves, not as Kofyar, but only as natives of a particular village.

More than 30,000 of these people live in a geographically demarcated territory of about 200 square miles, or



Crops are planted on the ridges between the basins where they will not flood, and basins hold rain even when it falls torrentially.

Yams and sweet potatoes are among the root crops to be planted on the ridges here, being hoed. Women bring ashes as a fertilizer.





CORN is planted at start of rains, which last from April throughout September, and may total five feet. The basins permit slow seepage.



WOMEN transplant millet on the basin-irrigating ridges. Kofyar farm on subsistence level, but their methods keep people famine-free.



line of hills and an immediately adjacent band of plains at the foot of the escarpment some 70 miles southeast of Jos. Although groups such as the Goemal or Ankwe and the Sura are within an hour's walk of the nearest Kofyar villages, and interchange is frequent, the Kofyar language, dress, house type, and agricultural practices differ markedly from those of people in neighboring communities.

THE local development of Kofyar farming techniques are particularly interesting. With the publication of recent books on the shifting cultivation of the Azande in the Congo, the alluvial gardens of the Rhodesian Tonga, and the Sinyo method of irrigation in Tanganyika, we are just beginning to realize the skill and ingenuity with which Africans have adapted indigenous agriculture to various environments. The most widespread method of growing crops south of the Sahara is shifting, or swidden, agriculture, in which a field is farmed until its yields decline. It is then allowed to remain fallow until fertility has been naturally restored. This requires a considerable land area per person, however, and may lead to overcultivation in the event of rapid population increase. In striking contrast to this, the Kofyar practice intensive agriculture supporting a dense population on permanent farms that maintain heavy production from very limited areas.

When I first entered the Kofyar area in November of 1960, it was almost impossible to see the thatched huts of individual family homesteads because of the thick growth of grain sorghum (*Sorghum vulgare*) that surrounded them. I later discovered that a crop of early maturing millet (*Pennisetum typhoidum*) had already been harvested from the fields and that cowpeas, okra, and pumpkins were interplanted with the sorghum. Homesteads were not clustered in nucleated villages but were dispersed, each family living in the center of its field. The average size of a field was just over an acre. These intensively cultivated plots furnish the bulk of their owners' food year after year for generations. The Kofyar are almost without exception subsistence farmers, yet they maintain a famine-free population approaching 4,200 persons per square mile in some areas. They do this without irrigation or domestic animal power, and with tools no more



IN PLAINS VILLAGES, ridges are built at end of wet season to retain rain.

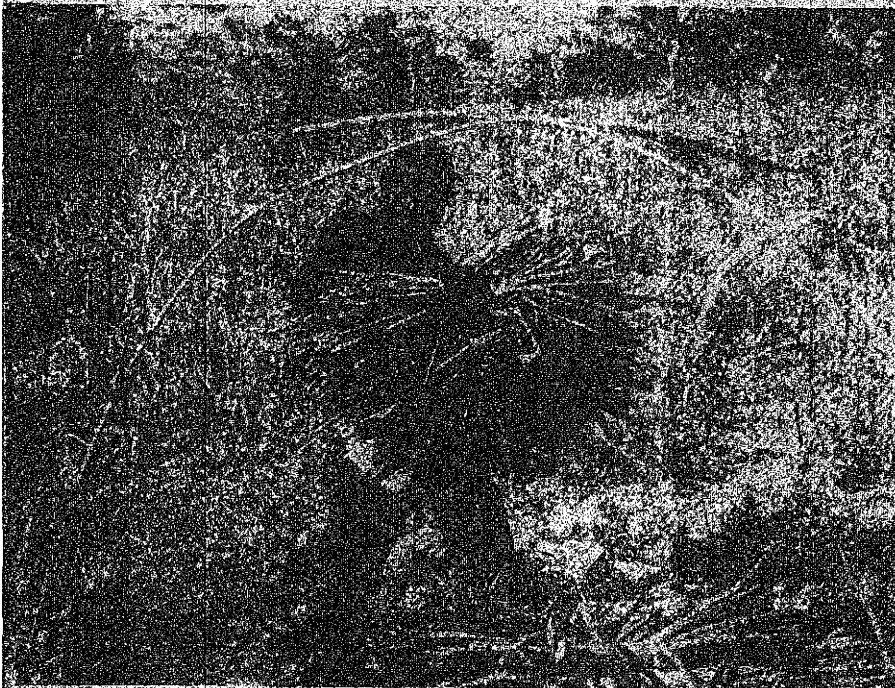


complex than the iron-bladed Sudanic hoe, the ax, and the sickle.

The Kofyar environment provides certain advantages and also imposes severe limitations. Rain falls in quantity during six months of the year, from April through September, when it totals forty to sixty inches. Kofyar country includes part of the escarpment that intercepts rain-bearing winds from the south, thus insuring a more dependable supply of moisture than the high plateau lands farther

north. The rain water is absolutely necessary for agriculture, of course, but it can also be a dangerous force, swiftly eroding exposed hillsides and turning low places into swamps. Hill soils may not be deep, but they are well supplied with minerals from rock decomposition. Thus, although fields are initially productive, two or three years of repeated grain crops are enough to sap much of their vigor.

The most conspicuous achievement of the Kofyar is their successful con-



OVER MEAN of worker is an increase with this insure successful harvest.

INTENSIVE cultivation includes early maturing millet crops, yam, and corn.



servation of water and soil. Wherever practical, the hillsides are terraced with rough stone walls one to six feet high, which anchor the level patches of soil. Terraces are higher on the intensive farms around the homesteads, where it is an advantage to have wider plane surfaces and deeper soils, but even bush fields outside the village, used only on a shifting basis for small crops such as peanuts, are terraced.

Although some of their neighbors also terrace on a smaller scale, the Kofyar are unique in performing a process called basin listing. They hoe the earth into rectangular ridges and leave a hollowed-out depression in the middle. They plant their crops on the ridges, where they will not be inundated, and the basins retain the rain water, even when it falls in a violent deluge. The system has the twin benefits of holding rain water so that it sinks gradually into the soil for use by the growing plants, and of preventing destruction caused by rapid runoff and erosion. Thus steep, treeless hillsides are preserved as a productive resource. The Kofyar recognize that leaching and washing of topsoil lead rapidly to infertility, and when I asked them why a particular field was exhausted, their reply was frequently *am mang*, "water carried it off." Professional agricultural engineers have

told me that Kofyar methods of soil conservation could not be improved.

The obvious investment of labor in terracing is impressive. Farmers keep up their old fields, but there is little new construction of terraces today. In the past, building was done, not by organized groups, but by individuals who raised single walls and then pulled earth down to form a level bench.

ONE old man who had literally carved his farm from the hill often berated his children for their laziness and compared his achievement to the puny efforts of the modern generation. Terraces are still mended by volunteer groups who are rewarded with beer by the field owner. Almost all farmers continue to follow the basin-listing pattern, and even on the plains the waffle-like ridges are erected toward the end of the wet season to retain the last rains. The Kofyar are equally adept at dealing with water-logged areas. There they make rows of high mounds at right angles to the slope and separated by channels to carry off the excess moisture. Every technique used is adjusted to the terrain. A single field may be terraced and basin-listed on the steeper slopes, basin-listed on relatively level stretches, and ditched on the poorly drained bottom areas.

In order to support continuous intensive agriculture, the Kofyar must both conserve soil and water and restore some of the nutrients that their crops take from the soil. Fertilizing the ground by systematic application of manure is practiced very little in traditional African systems of agriculture. The Kofyar meet the problem by careful accumulation and application of organic material. Each household has a round stone-walled *ba*, or corral, ten to fifteen feet in diameter, situated near the entrance to the homestead. All the goats belonging to family members are staked there throughout the growing season. Women and children fetch water, fresh green grass, and leafy branches for them daily. Substantial quantities of uneaten fodder mixed with goat dung accumulate in the enclosure and are removed and distributed about the field by a group of co-operating neighbors just before the rains come. They also clean out the huts where the goats are penned at night. Successive cultivations of the maturing crop work the compost into the soil. The Kofyar also take advantage of the recent arrival in the area of Fulani nomads by paying them to herd their cattle on bush fields where the fertility is low.

While the homestead farm (*mar koepong*) is heavily fertilized to make annual crops of large grains possible, the Kofyar also cultivate extensive areas beyond the periphery of the village. They farm these bush fields (*mar goon*) on a shifting basis to produce subsidiary foods, and although they do not spread compost on bush lands, they use certain other fertilizing agents selectively. For instance, every bit of wood ash is saved from household cooking fires and stored in specially built huts. Women carry the ash to the field in baskets and apply a handful at a time to individual plants of peanut and sweet potato. Secondary growths and weeds are also piled and burned in fields to furnish ash beds.

THE Kofyar follow still another practice in the case of *achin* (*Digitaria exilis*), a grass with tiny seeds that may have been domesticated in the western Sudan. All shrubs and grasses growing in a field are uprooted and piled in rows to be covered with small ridges of earth. The *achin* is then sown broadcast.

In addition to green manuring and the use of ash in the bush fields, the



Women are rewarded with beer that is made from millet after the harvest.

Basin listing. Traditionally, these people are aware of the need for crop rotation.

Kofyar practice a regular crop rotation. They recognize that *acha*, alternated with peanuts, keeps the ground in good condition longer. Bush fields can be kept in production for six to nine years before fallowing. With a single crop, the soil they say, becomes quickly worn out and white (*bes pyo*). They also take pains to adapt their planting to particular microenvironments, growing coco yams as a staple in camp sections of the village, and sorghum in drier areas that have more direct sunlight. Use of early and late millets is also closely related to rainfall. Different varieties of sorghum are used in red volcanic soil and in the more common brown earth.

QUESTIONS as to the origin of Kofyar agricultural practices are not easily answered. Although many African farming groups spread household refuse on small garden patches, few approach the systematic manuring of the Kofyar people. The Ghoktem branch of the Sura, who live in an environment almost identical with that of the hill Kofyar and who speak a closely related language, merely stake their goats out individually along paths and in uncultivated tracts. Terracing, often of a rudimentary sort, occurs at various places on the Jos Plateau and among Chadie-speaking groups in the hills of Adamawa and Sarraua provinces. In tools and crop varieties, the Kofyar resemble the pagan peoples found throughout the western Sudan, but the manuring, basin listing, and crop rotation patterns appear to be indigenous. The practices are not traceable to colonial influence, since Europeans did not enter the area until 1909, and effective control of the hill villages came only after the military operations in 1940. In the absence of historical records and archeological evidence, we may surmise that the Kofyar independently developed many of the features of their agricultural system.

Kofyar agriculture is by no means static and resistant to change. New varieties of coco yam and European introduced strains of peanuts are gaining wide acceptance. Marshy lands at the base of the escarpment have been drained and put into wet rice production within the last twenty years. Just before I left the area, a number of villagers approached me to request seeds of the tomatoes in my garden. The most important development,

however, has been the rapid expansion of Kofyar farming. The cessation of warfare and slave raiding, combined with the opening of markets and roads to urban centers, made growing of surplus crops both practical and profitable. The Kofyar were able to leave the protection of their hills and break vacant land to the south. Migration began about 1930 and served originally to reduce population pressure in some villages that lacked sufficient land. Within the last fifteen years, an increasing proportion of farmers have concentrated on cash crops. The new pattern consists in taking up unoccupied land around Namu or Kurgai, some thirty miles away, while keeping the traditional homesteads in production. Men and their families commute between the two areas. This is possible because crops planted on the pioneer farms mature at different times from those at home. During the normally slack period of the dry season, many Kofyar make heaps for the profitable yams that thrive on the lowlands. These mounds, or hillocks, of earth, 1 1/2 to 2 feet high and roughly conical, surround the growing tubers. Sorghum, millet, and cowpeas are also grown for market by using only the techniques of shifting agriculture. The new land must often be cleared of trees, but it is fertile enough to support several years of cultivation before fallowing. It is level and easily worked, so that methods of ridging, terracing, or manuring are not needed. The Kofyar have no title land waiting for use, and as practical farmers they see no reason for the increased labor and slower profits involved in more stable exploitation. Their cash cropping has been established voluntarily without official encouragement. They are doing what they know best in a way that allows continuity of family and village life, plus access to the modern money economy with its concomitants of cloth, bicycles, kerosene lanterns, and school fees.

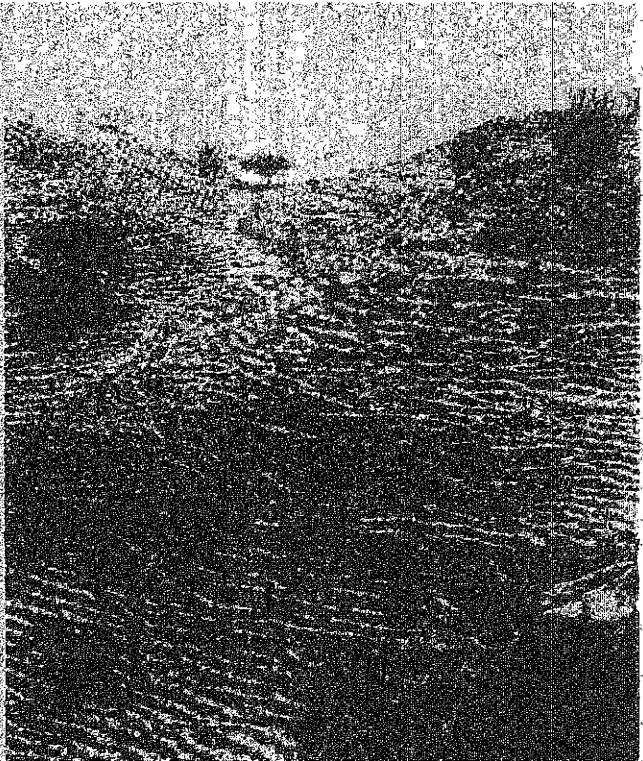
WHEN I asked them if they would leave the hills permanently, the Kofyar replied that they would stay with the graves of their forefathers. A few families from those villages where land is in short supply have found it advantageous to shift residence to the lowlands. There are limits to the numbers that can be supported even by Kofyar agriculture, and young men who would normally take up a vacant

homestead have no place to go. With continued population expansion, this alternative may be increasingly chosen, but at present the majority of migrants maintain two farms, practicing intensive agriculture in the home village and shifting cash cropping on the plains. The compromise allows them to enjoy the best of both worlds. Middleman functions are being taken over by local entrepreneurs, and one of the plains chiefs has invested in a truck that goes regularly to the Jos market. The Kofyar response to the opportunities of a modern cash economy is proving as effective as their initial adaptation to the physical requirements of hill agriculture. By varying their techniques of exploitation, they have been able to maintain a dense, stable population while enjoying natural protection from their enemies and, more recently, realizing the benefits of market relations in the larger Nigerian business society.





GRAIN, sorghum, towering over load carrier, at left, indicates, by its height, the fertility of the soil.



HILL TERRACES, which allow high food production from limited areas, demonstrate the ingenuity of Kofyars.

GOAT RING is important to hill people for fertilizing crops. Herds are corralled near homestead entrance.

