Ministry of Agriculture
Sudan Government

A DIETARY SURVEY AMONG THE ZANDE OF THE SOUTH-WESTERN SUDAN

By G. M. CULWICK

With

A CLINICAL NOTE

By
P. H. ABBOTT, M.B., B.Chir.,
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AGRICULTURAL PUBLICATIONS COMMITTEE
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A Survey of Signs of Nutritional Ill-Health among the Zande of the Southern Sudan

by P. H. ABBOTT, M. B. B., Chir.,
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I.—SUMMARY AND CONCLUSIONS

DIETARY

1. The main dietary conclusions are as follows:—

1. *Quantity*: The peasant diet and that of some categories of wage-earners is geared to a slow rate of living with a low output of energy. Development entails raising output; this will require an increase in the total amount of food consumed and will create a demand for it by reason of enhanced hunger, with consequent pressure on the existing subsistence food economy. This is already happening.

Paras. 10, 90ff., 290ff., 314ff.

2. *The Protein-Carbohydrate Ratio* is too low for safety. There are several ways of improving the position:—

(*a*) increased consumption of foods with a high protein-carbohydrate ratio, such as animal products, pulses and oilseeds;

(*b*) increased consumption of fat (as oil or in oilseeds) in place of carbohydrate;

(*c*) reduction of the proportion of cassava in the diet by replacement with any grain. In this respect, any grain is more useful than eleusine (but the latter is important in maintaining calcium intake at a satisfactory level).

The present imbalance could easily be aggravated, *e.g.* by selling groundnuts and making up on cassava. or by raising the energy value of the diet by additional carbohydrate, *e.g.* sugar, whether local brown or imported white, or by still further increasing the consumption of cassava.

Paras. 250, 302.

3. *Riboflavin*: Clinical evidence shows a slight shortfall below requirements, though nothing like as serious as the dietary findings suggest. Dried cassava is the enemy here, contributing none. Pulses, oilseeds, animal products and leafy vegetables are the best sources, but cereals, fresh roots and fruits can all make useful contributions. Here again, other cereals are to be preferred before eleusine. Processing can be a valuable aid: soaking and souring, fermentation (not necessarily for the production of alcoholic beverages). Yeast is a more sophisticated means to the same end, more appropriate to large-scale handling of food, *e.g.* communal feeding, bulk production of flour, manufactured foods like biscuits.

Paras. 283ff., 311.

4. *Vitamin A*: Vitamin A is short for most of the dry season because the richest sources then easily obtainable are unpopular and only sparingly eaten. Intake is high in the rainy season owing to the popularity of the leafy vegetables of that season, and the absence of deficiency signs suggests that enough is taken then to carry the people over till the mangoes come in. The present contribution of sweet potatoes is problematical; the use of suitable varieties would safeguard the position in the dry season.

Paras. 262, 307.

5. *Other Nutrients*: The other nutrients evaluated were found to be adequately supplied. Comments will be found in Section XI.

6. *Cassava* has a valuable rôle to play as a supplementary food and famine reserve, but it has encroached beyond those limits, is ousting cereals, and unless checked, threatens to undermine the whole nutritional position. Its attraction lies as much in its low processing costs as in its ease of cultivation.

Paras. 103, 111, 121, 167ff., 213ff., 252ff.

7. *Stress Period*: There is a marked stress period in April-May, when the hardest work coincides with the lowest energy intake, and people lose weight and feel overburdened. The low intake was not found to be due to scarcity of basic foods, except in families which were opening up a new homestead at too great a distance from the old one to make much use of the cassava left there, or whose cassava in the old home had suffered through pigs and had run out before the new had come into bearing. The principal cause was a clash of field and domestic duties, especially in small households, the women being too tired to grind and cook, and of course the less they ate, the tireder they got. Families were filling themselves up on mangoes, and reducing domestic chores to a minimum. This situation could be at least partly alleviated by forethought and the prior preparation of a stock of flour. Experiment showed that eleusine flour keeps well for several months even in wet weather. Cassava flour was not tested, but the dried lumps, which require very little further work, keep sufficiently well to cover this period and a stock could be made ready in that form. The tedium of preparing a lot of flour at once could be mitigated by a series of working parties, a device already familiar for agricultural purposes.

Paras. 97, 203, 265ff., 292.

WAGE-EARNING

2. Wage-earning affects the diet for both good and ill, according to circumstances. In so far as it tears a man out of his family background, *e.g.* casual labour, a moving job, or one subject to constant and unpredictable transfers, it leads to a most unstable manner of living and haphazard feeding, mitigated or aggravated by individual character and circumstances. In so far as it is compatible with family life, is combined with some degree of education and good sense, and adds the advantages of purchasing power to a measure of home production (at least on a garden scale to provide important supplementary items), it can greatly improve the standard of living from the dietary as well as from other points of view. Character and the nature and extent of family obligations determine where between the two extremes any particular family will find itself, but broadly the lower wage groups tend towards the first unstable type and *vice versa*.

Paras. 58, 68, 115, 209-210, 219, 249, 252, 269, 296, 299, 301, 315ff.

EXPENDITURE ON FOOD

3. At the prices ruling in Yambio early in 1948, a reasonable estimate for food expenditure in the highest wage grades, with generally

more sophisticated but not unduly extravagant tastes, would be 50-60 P.T.(1) per head per month, assuming no basic supplies are home-grown and excluding any expenditure on maintaining a vegetable garden or on beer. This last could be anything from 0 to well over 100 P.T. per household per month.

4. A sample budget for a family maintaining more traditional patterns of feeding, but at a level allowing the margin required to raise output above the slow peasant rate of living, has been founded on the police families' records, assuming all basic foods to be purchased and only supplementary items to be home-grown. At the Yambio price level of early 1948, expenditure on such a diet at 2,500 calories per head per day comes out at 33 P.T. per head per month. Expenditure on beer is again subject to wide variation, but 25-30 P.T. for husband and wife for the month appeared to be common; on the price ranges given in para. 229, this may be taken as an average of half a litre a day for each. Firewood, abundant in the rural homesteads, is a more difficult matter for the wage-earning family in a station. In Yambio in 1948 for a family buying the whole of its essential fuel needs, the cost would be at least 10 P.T. per month; the alternative was to fetch it from outside the town at a time-cost of two hours for a load lasting two days.

RESETTLEMENT

5. The immediate nutritional effects of resettlement seem to be a hard, lean year followed by an easy, fat one. In addition to obvious things like pressure of new clearing and building in the first year, the introduction of cotton in the very first year adds to the hardship of the removal; clearing for it, coming at what is anyway the point of heaviest pressure (see para. 1 (6) above), means that less land than usual is cleared in time for double-cropping with food crops. To introduce cotton in the second year would spread the physical burden of resettlement, but taking two bites at the cherry might have disadvantages of other kinds. After its first year, cotton encourages increased production of groundnuts and a larger proportion of land double-cropped, because the old cotton plots are clean and ready at the onset of the rains. The nett increase in production may not be as great as it seems at first sight, for adjustments elsewhere probably partly offset it. The production of measured plots of specified food crops for sale instead of cotton may react differently on the subsistence agriculture.

6. The third year should presumably see things shaking down into some sort of established pattern incorporating the new cash crops. In the southern areas, with a 27-month staple cassava, it is only in this year that the cassava rotation will be re-established, and during the first part of the cultivation season there may well be a shortage. In the first year all cassava bitter or sweet is in the old home. By the second year, sweet cassava is ready in the new homes, but the bitter has to come from the old. With the help of the wild pigs, the supply

(1) 10-12 shillings.

may not last out till the plantings in the new settlement come into production towards the end of the third rainy season. In the northern sub-district with a 15-month staple, the rotation will be re-established in the second year.

Paras. 59, 61, 65-6, 97ff., 214, 237-8, 246-7, 293-4.

7. The long-term effects of resettlement on nutrition can hardly be gauged as yet. Theoretically, it is intended to lead to permanent homesteads in which fruit trees and other long-term amenities can be developed, as well as to improved methods of agriculture resulting, presumably, in increased productivity. In the first, it has to contend with the forces which impel the Zande to migrate, and the fight must be a hard one because these customs are rooted not in reason but in psychological fears unamenable either to reasoning or to Government regulations. The second intention has to contend with Zande inertia and low energy output as well as all the frustrations arising from inadequate staff.

8. Some more general considerations are touched on in para. 12.

Paras. 23ff., 35ff., 54, 121.

FACTORS INVOLVED IN THE IMPROVEMENT OF FEEDING

9. The improvement of feeding cannot be considered *in vacuo*, but only as a part of the process of raising the whole standard of living. Foods and feeding are tied in at innumerable points to the social and economic fabric and the problems involved in improvement can only be tackled if their relationships are understood. Prescribing a new food will not get it cultivated or, even if cultivated, eaten. The first involves, besides technical cultural considerations, study of the human aspect of its cultivation-costs and of its domestic implications in relation to existing claims on the women's time. The second requires :—

(*a*) the realisation that innovations have to get across as appetising food, not as chemical compounds which are good for you ;

(*b*) an experimental kitchen directed by a resourceful imagination as part and parcel of the work of the Research Farm ;

(*c*) some definite channels for demonstration and the propagation of ideas.

Both depend on solving the psychological problem of evoking interest.

I think the possibilities of institutional feeding for practical food education are limited to schools, and there only if there is a woman with time to give to it. Hospital feeding has no bearing, in the victim's mind, on everyday life ; it is simply part of a largely incomprehensible regime to which he is subjected when sick. The same goes for prison feeding for a rather different reason—it is part of the punishment.

10. Development, whether considered in its purely economic aspect or in a wider sense to include education, general welfare and

social considerations, demands more time and trouble and energy output—it simply is not possible within a pattern of life geared down, as to both output and intake, to the present rate of living of the Zande peasant. A growing pressure on food supplies is creating supply difficulties for both institutions and individual purchasers, and I do not think it is wholly attributable to competition from external markets like Wau and Juba. An internal factor (in more senses than one) will be increasingly felt as development expands and can be very simply described—busier people mean hungrier mouths.

11. The labour costs of food production include processing and domestic costs as well as cultivation. These may well be limiting factors unless some degree of specialisation and simple mechanisation replaces the extravagantly time-costly and energy-costly methods of the primitive peasant. The most obvious example is the production of cereal flours (satisfactory as to both physical properties and nutritional value) to compete with the encroachments of cassava. This is not only a matter of large-scale production for labour institutions ; it is equally a domestic problem and should be a village problem if such a unit as a village existed in Zande rural life. It is difficult to see how the standard of rural living is to be raised unless something akin to a village, with its territorial cohesion and cooperative specialisation of skills, develops in the social structure. It seems to be an essential phase. It would require the circulation of money, but that is not at all an impossible condition, for already the economy is half based on money, which comes in for chillies, honey and through the wage-earners. Much of it goes straight out again, but much also is hidden away, and it could do useful work in the community by circulating internally in a partly specialised village economy.

12. At first sight, it would seem that the new settlements could be a step towards this, but in fact they string the population out so widely in long lines that they give more encouragement to the Zande passion for domestic isolation than the old roadside settlements. Whether the territorial unit of the *gbaria* or line could nevertheless become the starting-point for the development of corporate interests and a sense of community it is impossible to say.

CONSUMPTION TARGET

(Immediate)

13. A reasonable consumption target for immediate purposes can be stated, in the light of the survey data, in terms of the traditional feeding pattern, and for practical reasons this is given in preference to anything more ambitious. It may serve as a first step, a basic pattern on to which dietary innovations may be grafted to improve both nutritional value and consumer interest. It is intended for a *mixed* population considered on a per head basis, and would not be adequate, for instance, for a group composed entirely of adults doing hard work. The feeding of institutions has been dealt with in a previous report to the Committee ; this one is concerned with the general population.

Category of Food	Tons per 1,000 Mixed Population per Month	Nett g. per Head per Day
Grains, various, unprocessed ..	8.8	250
Cassava, dry lumps	6.7	200
Cassava, fresh, gross ..... *or* Sweet potatoes, fresh, gross .	3.8 / 4.6	100
Oilseeds :—		
Groundnuts, in shell	3.8	90
Sesame.....	0.5	15
Other, gross	0.5	10
Dried meat *or* dried fish *or* pulses, edible portion (1).....	0.9	30

Supplementary Foods: Yams, bananas, leafy and other vegetables fruits, honey.

14. This, without the supplementary foods, would provide approximately 2,400 calories and 53 g. protein per head per day, with adequate amounts of minerals and B vitamins (2). Vitamins A and C would depend as now on ringing the changes seasonally on leafy vegetables, fresh roots (including coloured varieties of sweet potatoes) and fruits. What it means in terms of acreages and tonnage at field depends on yields and losses between field and kitchen door. Waste incurred between the state indicated in the schedule and actual consumption, *i.e.* in preparation and as pot waste, has been allowed for in calculating the final column of g. per head per day.

II.—BACKGROUND TO THE SURVEY

GENERAL

15. The people selected for the study were the Zande and the associated groups living in the Zande District of the Anglo-Egyptian Sudan, that is, along the eastern side of the Nile-Congo Divide in the south-western corner of the country(3). The area borders on the Belgian Congo and French Equatorial Africa, and the majority of the tribe live in those countries. The choice was made partly because the information would be useful to the Sudan Government's Zande Development Scheme, and partly because the food economy of a people better off than their neighbours in respect of quantity and variety through the year, but having practically no animal products, seemed likely to yield information of general interest.

(1) *i.e.* pulses shelled ; meat or fish, without making any allowance for inedible waste which varies with the type of product.

(2) Unless destructive and wasteful methods of treatment are adopted, and subject to what is said in para. 1 (3) about riboflavin and paras. 256 and 305 about calcium.

(3) Roughly 5° N and 30° W.

16. The Equatoria Handbook (viii) gives the Zande area (in the Sudan) as 21,345 sq. miles, with a population of 185,043, an overall density of 8.7 per sq. mile ; but the population follows the best land and is heaviest in the southern half of the area, being sparse to the north and west. The population with which the survey was concerned amounted to roughly 104,000 people ; see Table 3. Owing to their remoteness from the outside world, development plans have been founded on the production and local processing of commodities for the markets of the Southern Sudan. Cotton grown by the peasants is to be ginned, spun and woven on a small factory scale ; the spinning and weaving machinery had not yet arrived at the time of the survey and for the time being the cotton crop was being exported as lint. A small sugar plantation and factory was turning out crude brown sugar; there was talk of oil and soap production ; tobacco-curing was being tried on an experimental scale ; and a little coffee was being grown. Industrial activities were to be concentrated some miles from the district headquarters at Yambio, and the site was in process of development.

PHYSICAL ENVIRONMENT

17. The country is undulating, tedious to the traveller hemmed in by walls of exuberant vegetation, with few glimpses of a wider landscape to break the monotony. Most of it is high-grass woodland or, particularly in the north, medium-grass woodland. A network of streams coming off the watershed ensures that nobody has far to go for water, and the soils are lateritic, red and acid, varying from deep red loams of good water-holding capacity to light shallow soils full of ironstone pebbles and of poor water-holding capacity (xi). The underlying rocks are mainly gneisses and granites overlain by ironstone. It is all tsetse country, so the people own no cattle and practically no small stock.

18. Climatic information from two meteorological stations in the district will be found in Table 1. It will be seen that while some rain falls in every month, the rainy season is from March to November. The total is about the same at both stations (Yambio 1,429 mm. and Yubu 1,424 mm.), but there is a tendency towards a greater concentration of the fall at Yubu, where it is somewhat drier in the dry season and wetter in the wet. The curve rises rather more slowly in the early rains and tails off more sharply after September. This tendency, which is distinctly seen if the figures be drawn out as curves, becomes more pronounced further north still, and beyond Tambura there is a wholly rainless and longer dry season. At the survey's Bo Road sample, 100 miles north of Tambura, rain did not fall nor did the termites fly in 1948 until April, this being apparently regarded as perfectly normal. Similarly it seems that the rainy season ends more abruptly in that area, but this was difficult to judge in a year in which the rains were curtailed everywhere in the district. The opinion expressed to me that the total rainfall is as great in the north of the district as in the south may be correct, but there is a difference in distribution which greatly influences the life of the people.

19. The rainfall of the twelve months of the survey (July 1947 to June 1948) was unusual in distribution in that the rainy season of 1947 ended early and that of 1948 was a slow starter. The figures for Yubu illustrate this, Table 2. My work was therefore done against a background of bad harvest and subsequent unusually light early rains.

SOCIAL ENVIRONMENT

20. The Zande are organised on a hierarchical system under a number of more or less independent but often related chiefs. Under them come sub-chiefs and headmen. There is a royal clan of ancient standing, the Avongara, but those of its members who came into the survey, though enjoying some social prestige, did not differ particularly in their manner or standard of living from other families around them. The ramifications of the large establishments of the chiefs were outside the scope of the survey, which was concerned with the life of the general public and not the exceptional few. The households of sub-chiefs and headmen were included where they occurred in the sample groups, for their domestic economy was comparable with that of their people.

21. The Zande proper came in as conquerers from further west some generations ago, absorbing or dominating numerous smaller groups. Distinction between them may be of interest to the ethnographer but not from the point of view of the food economy. In the southern part of the district, it is true that some minor or local differences in tastes might perhaps be found to follow the lines of old groupings, but the subject appears to be of little practical interest. There is, however, a real difference in economy between the main (southern) part and the poorer and more sparsely-inhabited north. This is a distinction based on environmental rather than tribal factors. Tambura is taken as a more or less arbitrary point of demarcation ; there is really no clear-cut line of difference but a shading-off according to conditions of soil and climate. For the purpose of this report, those living south of Tambura, though admittedly mixed, are called collectively Zande ; those living north and north-west, a number of smaller tribal units under Zande rulers, are called collectively Balanda.

22. The people of this area were first visited by British forces from Wau in 1902, but British influence was not established till 1907. By the 1920's it had developed into a fuller administration, and Italian Catholic and British Protestant missions were also established. The generation since then has slowly but steadily been increasingly subjected to influences from the outer world.

23. The people live at present in two types of settlement—those recently established under the present resettlement scheme, and those made during the sleeping sickness campaign. Some twenty or more years ago everybody was obliged to move out of the forest on to the roads as part of the sleeping sickness control system, and homesteads are consequently found irregularly strung out along the roads. Some people will be cultivating fields near at hand, others in the course of shifting rotation will have opened up land at a distance, perhaps two to three miles or more. In this case they usually build other huts in the fields and stay there part of the time, especially in the cultivation season.

With the partial relaxation of the controls in recent years, others again have drifted off to other sites.

24. Another type of arrangement is now being tried out in a scheme which is being extended each year. In this, the population is spaced out along straight lines, cut through the bush at right angles to major pilot lines. Each holding has a frontage of 150 yards along the lines and is supposed to run back some 1,200 yards, though the further end is not precisely demarcated. It is hoped to anchor the Zande to permanent homesteads on these holdings of about 40 acres, within which there is room for them to move their fields in their shifting rotation. The occupier of each holding must cultivate half an acre, measured out by instructors, of cotton or a specified food crop for sale, as directed, in addition to his usual food cultivation.

25. It would be incorrect to apply the word *village* to either type of settlement, for Zande society lacks the feeling for any kind of corporate life such as that word connotes. There is really no such unit in their social organisation, even though the homesteads in the older type of settlement may be closely grouped. Each has its individual links of kinship and its individual relationships to headman and sub-chief, forming a net-work of interlacing ties cutting across all territorial considerations. One of the objects of the present resettlement is to disentangle the followers of each sub-chief and headman and group them territorially, but it remains to be seen whether any territorial sense of community will develop. It would have to contend with the Zande's passion for domestic privacy. His ideal is a homestead hidden away in the forest, safe from all prying eyes and unwelcome intruders, particularly those who come with adulterous intent. In fact, the new settlement, by stringing the homes out more widely on large holdings, tend to the satisfaction of this separatist taste rather than towards a more sociable form of living. Even in the old roadside settlements, however closely sited higgledy-piggledy the homes may be, their occupants contrive to achieve a quite remarkable degree of privacy, making the most of the dense natural cover and using grass screens, cassava hedges and other devices.

26. The same kind of living arrangements and a similar absence of the villages as a social unit are found among the Balanda, whose settlements are so far all still of the older type.

27. Habits of this kind increased the difficulties of recording, for the labour and time involved in locating people each day was much greater than in a community of more sociable ways.

28. Descent is patrilineal and marriage patrilocal, with payment of bride-wealth, still called spears but now usually cash. It is fixed at 120 P.T. (24/-) payable in two equal instalments, the first authorising what amounts to a trial marriage, and the second ratifying it after which it is registered by the Native Court. The fathers easily find a way round the limitation of amount by extorting various presents of cloth and so on from their sons-in-law during the trial period, as a condition of their agreeing to accept the final ratifying payment.

29. A woman's closest personal and emotional ties tend to be with certain of her kin, and later with her children, rather than with her husband, her relationship with whom has more of the element of

contract. Thus she remains very much under the influence of her relatives even after the completion of a marriage contract, and there is often a severe conflict of authorities.

30. It is astonishing to a newcomer to read of the virtual indissolubility of the marriage bond from the woman's side twenty-five years ago, and the very cautious relaxation in the tribal law induced by Major Larken to alleviate their state of bondage, a *via dolorosa* by which a determined woman could win her freedom by way of prison. Today, under an outward submissiveness of demeanour which deceives no one in tribal society, the women very largely go their own way. Deferment of acceptance of the final payment suits them as well as their fathers, keeping the relationship fluid and undermining the position of the husbands, who are kept in the position of suitors, placating both wife and father-in-law. It is common now for a young woman to make a series of such temporary marriages, and even when a full marriage is entered into, there does not seem to be any real difficulty about getting out of it except where a dispute arises over return of bride-wealth and somebody turns cantankerous, invoking the letter of the old tribal law against her. A year spent on familiar terms with numerous Zande homes. following the intricate tangles of their domestic politics, suggests that if actual practice in the past was as inhuman and rigid as it sounds, then the present generation has seen a social landslide. This fluid background to domestic affairs and instability in relationships is one of the factors encouraging a hand-to-mouth day-to-day manner of living and a lack of interest in improvements which require continuity and sustained effort.

31. It is a much more serious stumbling-block to social development than the practice of polygamy on a moderate scale which, in a society organised on a peasant basis, makes for better living conditions for the whole family. It is the small household which suffers most in seasonal stress periods or from the effects of illness or pregnancy, not the home where two or more women divide the tasks as convenient. Outsiders tend to read their own emotional repugnance into situations whose whole emotional element is differently oriented from their own, and to assume that polygamy must be a state of degradation. In a peasant society, a bigger household means primarily more hands and greater stability. When conditions of living change to a primarily wage-earning economy, polygamy tends to decline without direct attack because the hands are transformed into mouths. Among the Zande peasantry, or in transition groups still closely linked to the peasant tradition, polygamy, at least in its moderate form, still plays a useful part in the social economy. The sex ratio of the population sees to it, of course, that in no society can more than a small proportion of households, say about 12%, be polygamous at any one time, even though by a differential age of marriage a slight increase in the ratio of marriageable women to men is maintained. The number of people who have at one time or another in their lives been members of a polygamous establishment is much larger. The exaggeratedly polygamous household is necessarily a rarity, with special considerations of its own which lie outside the scope of this report.

FERTILITY

32. Polygamy, even in its moderate form, is sometimes blamed for infertility, but in fact it is the normal practice in peasant tribes, both expanding and declining. The causes of the present dearth of children among the Zande have not been unravelled. Whatever they are, they have not yet overwhelmed the non-Zande groups to the north of them. The system of regular inspections for sleeping sickness necessitates keeping population records of a kind seldom available for primitive areas, and information drawn from them will be found in Table 3. It will be seen that in the Yambio Sub-District children made up only 22% of the population and among the Zande in the Tambura Sub-District only 28%, compared with the figures of 36% (Bakiri) and 43% (Bo Road and Sue) for the non-Zande groups further north. Whatever errors may creep in where ages have to be guessed, they can hardly be of a magnitude to obliterate these differences, whose existence is recognised by the Zande themselves, for they talk of going to look for a Balanda wife to get children. As regards trends in total population, the picture is complicated by clandestine border-hopping, either way according to circumstances. An analysis of the records of the Yambio Sub-District since 1933, made by Dr. P. Abbott in 1947, suggested that the population had been more or less stationary since 1940. Evidence of any increase in mortality was lacking, but from sleeping sickness inspections he had a strong impression of a high proportion of childless marriages. When I started visiting families, the number of childless homes was so startling that at first I thought they must be hiding their children from me. Later I made an attempt to collect the life histories of women in the areas where I worked, but preoccupation with other matters prevented much being done on this line and the numbers are small. The results, for what they are worth, are given in Table 4 and are in line with what has been said above.

33. This situation, of a population probably stationary and threatened with decline and a period of overweighting of the older age-groups relative to the young, is an important element in the background of the food economy, especially in relation to the burden of work and future developments.

CHARACTER OF THE PEOPLE

34. On first arrival I was apprehensive lest a community so dominated by oracles, witchcraft and fear of injury by supernatural means would find my interference in matters of food intolerably alarming, and would accordingly be unco-operative even if they did not actually close their doors against me. My fears in this respect were unfounded, and though a series of comic rumours about my intentions went round at my first and principal scene of operations, I had little trouble in getting on good terms with the families and establishing the recording routine among them. There is a servility about the Zande to-day which accords ill with their traditions as a conquering tribe. I think, however, that when they became accustomed to me I got past that and was not merely tolerated but welcome in most of the homes. They could not, of course, understand what I was at, but they humoured me in my daftness.

35. There is an accepted stereotype of the Zande peasantry as gay, laughing, happy-go-lucky people, and up to a point this is true. But underneath this surface picture of happy children of nature is another and to my mind more fundamental one. When I lived for a period in close and constant touch with them in their homes I saw them differently. My most lasting impressions have a sombre quality. First there is the burden of fear and anxiety which they constantly carry in regard to hostile unseen forces, unfavourable oracles, witchcraft set in motion against them by human ill-wishers, and the like—a burden much too lightly dismissed from consideration by outsiders. Secondly, there is a dead weight of apathy and inertia, rooted psychologically, I think, in regret for a past which, at least when seen from a distance, seems much more attractive to them than the more or less incomprehensible present. Physically it derives no doubt from the museum of parasites they harbour and their generally low standard of living. Thirdly, there is a frustrated, helpless acquiescence in or passive resistance to those innovations from without of which they happen to be suspicious for one reason or another, or which have failed to touch off any spring of effective interest in them. Their attitude to life seemed to me bored, with a nostalgic looking backward.

36. This is one end of the scale, seen in those rural families which are relatively unaffected by aspirations to get caught up in the reaching tentacles of the twentieth century. At the other end stand those who are more influenced by modern developments, equally disenchanted with the life of the cultivator as it is, and bent on getting out of it one way or another. New social values are crystallising out in the melting pot into which old and new have been thrown, and as usual are grouping themselves in a manner unfavourable to rural life and its associations with manual work. Some elements of society thus have their faces turned away from farming in one direction, rating almost any form of wage-earning above it; others, at the other extreme and with many intermediate stages shading off one into another, turn towards the past. Backward or forward and outward they look, but always away from the cultivator's life as it is today, which seems to commend itself to none. Benevolent recommendations or plans for improvements are apt to be like damp squibs in such circumstances, failing to strike a responsive spark.

37. This description of the Zande will be unacceptable to some of those who know them, but it is as I see the situation after a year's study of the family life of various groups. It is important in relation to my work because these psychological questions of interest, incentives and ends are inescapable issues in considering ways and means of establishing, not merely introducing, material improvements.

III.—SCOPE OF THE WORK

38. The survey had its headquarters at Li Yubu in the Tambura Sub-District, a medical station formerly a sleeping sickness settlement. The principal sample group lived near by, a peasant group slightly modified by wage-earning and the proximity of the station. Choice of base and main scene of operations was dictated by extraneous circumstances, viz. the availability of suitable accommodation and the unavailability of transport. Transport problems dogged the survey from start to finish and were responsible for lack of regularity in making repeat observations, and other deviations from the intended programme. The second limiting factor was the nature of the only field staff available, in regard to both education and character.

39. The team consisted of eight recorders, with a clerk-interpreter who was the mainstay of the party. An assistant from the Research Farm in Yambio was lent to the survey for two months during the rainy season, to help in collecting plant, insect and other specimens.

40. Work was undertaken in the following places, for which see the accompanying map (1):—

(*a*) *Taba*: modified peasant group adjoining Yubu Station. Continuous work throughout the year. Not resettled.

(*b*) *Madi*: peasant group living round Chief Madi's establishment, half-way between Yubu and Yambio. One month's recording in October. They were subsequently resettled, not all together, so the second visit was omitted.

(*c*) *Momboi*: peasant group, first-year settlement just north of Yambio. One month's recording in October and another in March.

(*d*) *Ukua*: peasant group, second-year settlement, 40 miles south-east of Yambio. One month's recording in November and another in March.

(*e*) *Bo Road*: Balanda peasant group 100 miles north of Tambura. One month's recording September-October, another February-March. Not resettled.

(*f*) *Li Yubu Station*: one week's qualitative self-recording by hospital dressers in July. Three days' quantitative recording on hospital and station staff in September, January and April.

(*g*) *Yambio Police*: Two weeks' recording in January.

(*h*) *Yambio Clerks*: One week's qualitative self-recording in January with three days' quantitative recording.

(*i*) *C.M.S. Teachers* (2): various places. One week's qualitative self-recording in July and October.

(*j*) *Nutrition Staff*: at Li Yubu. Apart from some practice recording on themselves, they did three days' quantitative recording in January.

(1) Nomenclature is inconsistent, being sometimes the name of the chief or sub-chief and sometimes a place name, according to which was most convenient or most commonly used.

(2) Church Missionary Society.

(*k*) *Short Recording* (qualitative) for checking typicality of samples. *Zande.* Mupoi (August)—peasant with some teachers at the Catholic Mission. Not resettled. Ibba (December)—peasant. Resettled. *Balanda.* Bikiri (August)—peasant. Bo Road additional group (February)—peasant. Neither resettled.

41. The work done was as follows :—

(*a*) *Qualitative Food Recording* : kinds of food eaten each day (hence one of my names—Naginimaligba = Mother-of-what-food-yesterday). Recorded continuously for 54 weeks at Taba. Other places for periods indicated in para. 40.

(*b*) *Quantitative Food Records* : food weighed before cooking, for three days at a time in each house. Taba—August, November, January, May. Madi, Momboi, Ukua, Bo Road—in each recording period. Yubu Station—September, January, April. Yambio Police, Clerks, Nutrition Staff—January.

(*c*) *Crop Records* : qualitative on all peasant groups and Yubu Station. Acreages at Taba, Momboi, Ukua, Bo Road.

(*d*) *Work* : attempts to collect some information on activities through the year.

(*e*) *Heights and Weights* : Taba—August, December, April. Madi—November. Momboi, Ukua, Bo Road—at each recording period. Bakiri—August. Yubu Hospital dressers and families —September, Yambio Police—January. Boarding schools : Mupoi—September and May ; Yubu—September and April ; Yambio—December and April. Bush schools from Yubu to Tambura—August, November, April. Other samples obtained at sleeping-sickness inspections in the Bakiri area (August), near Li Rangu (October) and Ezo (November).

(*f*) *Processing and Cooking* : study of methods, timing, etc.

(*g*) *Miscellaneous* : collection of specimens for determination or analysis ; determination of waste factors ; cooking and processing experiments ; collection of histories from women.

42. Drs. H. Woodman, P. Abbott, I. Hussein and D. Mustafa took an interest in the survey from the clinical side. Dr. Abbott has kindly agreed to the inclusion in this publication of his paper entitled " A Survey of Signs of Nutritional Ill-health among the Azande."

43. Some idea of the volume of material handled may be got from the following figure :—

Qualitative food records with other data of which some 10% drew blank.	Approx. 21,000 visits
Quantitative food records	between 1100-1200 visits
Cultivations roughly measured	over 200 acres.
Additional cultivations qualitatively recorded	approx. 200 acres.
Heights and weights taken	approx. 2,500
Plant and other specimens prepared	approx. 150

This broad approach has two advantages. First, the different aspects of the work interlock, supplementing one another and providing

mutual counterchecks. Many little points of corroboration could not have been foreseen by staff or informants setting out to play tricks, and similarly anomalies serve as warning signals. The material has been carefully scrutinised and sifted, and when necessary discarded, but on the whole it has stood up to test unexpectedly well. Secondly, the various aspects of the survey throw so much light on each other that one would have little confidence in presenting an interpretation based on one alone.

IV.—THE HOMESTEAD AND ITS CROPS

THE HOMESTEAD

44. A normal Zande peasant homestead, that is, the home of a married man, has at least two round huts and a store-hut on piles. The huts have walls of puddled clay, plain earth floors, and thatched roofs the rim of which, in the best examples, rests on forked uprights set a yard or so out from the wall. This not only takes the weight of the roof off the clay wall but leaves an airspace over it, thus making for both greater durability and better ventilation. It also provides a verandah all round the house, protecting the wall from the weather, providing shelter from rain and shade from sun and a place for stowing domestic belongings. The entrance may be closed merely by a movable reed screen or by a roughly carpentered door and frame. Huts range from this down to temporary shelters thatched to the ground over a frame of light poles and sticks. Store-huts are also round, raised on stoutly-built square platforms about four feet high ; the wall is of puddled clay with a movable thatched roof resting directly on it. Entry is gained by tilting up the roof at one side on a forked prop and climbing up to the platform and over the wall. (Ladies dressed only in the traditional bunches of leaves fore and aft do not perform this gymnastic feat in the public view). Careful householders take the trouble to put bell-shaped rat-stoppers of clay on the supporting poles of the platform.

45. If there are chickens they will usually be shut up at night in a small clay and thatch contraption raised off the ground and protected by thorn branches, with a round entrance closed by the insertion of a long heavy pole. Or they may be slung up in a tree in a closed basket.

46. An essential feature of every homestead is the *tuka* or spirit-shrine. This is merely a mound with a large branching, or at least forked, arm of *Hymenocardia acida* stuck upright in it. It is sacred to the ancestral spirits, and on it are hung first-fruit offerings, trophies of the chase, shells of eggs after hatching, and so on, to ensure (perhaps supplicate for) a continuance of supplies. The mound may be bare of plants or there may be a selection planted for medicinal and magical purposes.

47. Equipment and furniture is everywhere simple. From a minimum of clay pots, baskets, pestle and mortar, grinding stone, calabashes, gourds, knives, hoes, axes and other implements, spears,

bows and arrows and perhaps hunting nets, with a couch of grass laid on the earth or on leaves, it may range to a variable selection of chairs, tables, beds, boxes, metal utensils, cloths, blankets. Similarly, clothing ranges from a bunch of leaves fore and aft for the women, and a scanty bark-cloth cache-sexe for men, to cotton cloths and dresses, or shirts and shorts. A variety of locally made straw hats adorn the men, and some go in for feathered head-dresses.

48. Water is carried by the women in clay pots or, when they can get them, four-gallon petrol tins.

49. Social custom sets a standard, not always reached especially in new homes, of a minimum of two living huts for a married couple—one called the wife's and the other the husband's. This permits the entertainment and lodgement of guests of either sex. As the children grow up a hut will be added for the boys and another for the girls, possibly at a little distance from the main homestead and surrounded by small plots of the children's own planting. When there is more than one wife, each has her own hut and store. Elderly dependants may also have huts, and, if females, stores in or near the main homestead. In an establishment of some standing there will often be an open shelter for the entertainment of guests and other social purposes.

50. It is common for children to spend considerable periods with other relatives and to be equally at home in a circle of related households rather than rooted in one. This incidentally minimises the seriousness for them of any break-up of their parental home by illness, death or divorce.

51. A study of the intricate network of relationships between households, with interlacing rights and obligations, could not be attempted despite its obvious bearing on the economics of individual homes and group stability. The pattern appeared to be similar in principle to that described in other tribes; local variation in detail may derive from the heterogeneous nature of the groups absorbed by the Zande. Throughout, there appeared signs of strain consequent on the passing of the more or less closed society on which the efficacy of many of its sanctions depended. It is easier now to get physically or economically out of reach of traditional obligations.

52. A woman cooks on three stones either in her hut, out of doors, under her store-hut, in an old living hut abandoned and used as a kitchen, or occasionally in a hut specially built for the purpose. Firewood is easily come by, and on cold evenings families often sit round a good blaze out in the open.

53. The space between the huts is hard bare earth, clean and swept in a well-kept home. Rubbish is collected in one spot and built up into a low mound which in due course becomes a vegetable plot prized for its fertility. The sites of old huts also produce particularly heavy crops. On the edge of the cleared space will usually be found low ridges which it is the custom to throw up at the very onset of the rains, for the earliest sowings of maize and miscellaneous vegetables. All round, mixed cultivations and bush press close up to the cluster of buildings.

MIGRATION

54. A recently established home will have its main field close at hand, as well as its cassava and vegetable gardens. In older ones there will be varying amounts of miscellaneous cultivation close by, and the main fields probably at some distance. A man counts up the years of his occupation of a homestead by recalling the sites of his fields. I made persistent enquiries into causes of removal to new dwelling-sites, and always it was something to do with the oracles, witchcraft, deaths or illness, or some family reason for having to move or disliking the site. I never found it attributed to the need for new land, though once, troublesome monkeys were mentioned as a supplementary reason. A family would go on shifting its fields time and time again without moving its home, round which there would grow up a miscellaneous collection of food, medicine and other useful plants. But let an oracle speak warningly, or serious misfortune strike them, especially death of an adult, and in fear and haste they would flit and leave it all, even with the year's food half grown. In certain circumstances the buildings might be taken over by another family for a few piastres; in case of a death, they would be left derelict. The family would return to harvest crops as they matured, but these naturally suffered from lack of weeding or other care such as protection from animals. The place would also be re-visited periodically to draw supplies from the store while any remained there. Whatever loss or inconvenience a move might entail, it was made unhesitatingly if the oracles enjoined it or some fear overshadowed the place. Many people regularly consulted the oracles each dry season to find out if they could safely remain where they were or, if not, where they should go. Such habits naturally help to engender an extremely short-term attitude to life and to discourage any interest in longer-range improvements to homesteads, which seem like tempting fate. The strong emotional element inherent in this pattern of living and governing the response to situations as they arise will hardly make adaptation to any scheme of permanent holdings easy.

THE CROPS

55. The crops seen in the different sample groups are recorded qualitatively in Table 5 as a percentage of the units visited in each, *i.e.* 100 means that every unit was growing the crop in question.

56. The unit of recording for this purpose could not always be identical with the unit used in recording food consumption. For production purposes, the family of a married man might be inseparable from his mother or other dependant female relative. In the new settlements she would be living and cultivating on the same holding. Yet as a cooking and eating unit she might be separate, in which case she would be separately recorded in regard to food consumption. On the other hand, an unmarried son might take up a separate but neighbouring holding in the "line" and cultivate only cotton on it, being still an integral part of his parental home in respect of food production and consumption.

57. In this report, therefore, an *agricultural unit* means the unit of joint food production, whether single or multiple in respect of either

eating-units or holdings in the new settlements. A *domestic unit* means a unit which normally cooks and eats apart (1), though of course there may be very close relations between two such units and much coming and going. In such cases, quantitative records would be done on them simultaneously to simplify the question of visiting.

58. The peasant groups are arranged in Table 5 in their order from south to north, and within a basic similarity of pattern a tendency towards restriction in variety of crops is discernible towards the north. The wage-earners' list is also restricted.

59. Some of the plants shown as foods were grown primarily for some other purpose, *e.g.* gourds and calabashes, or deccan hemp. The leaves of the latter were not regarded as edible at all by the Zande, but the Balanda rated them high among their leafy vegetables. The new settlements, Ukua and Momboi, had no mango trees in bearing actually in their homesteads except where they inherited them from some earlier period of occupation of the same sites, but earlier occupation there as elsewhere had left its legacy of mature trees in the bush all round them. Similarly there were as yet no bearing bananas in these settlements, and the cassava rotation was upset (cf. para. 6).

60. Measuring total acreages, even roughly, was not easy because cultivation was in small irregularly shaped patches mixed up with bush, but an attempt has been made to estimate approximate acreages by pacing, either adjusting to a more or less rectangular shape or, if the plot was too irregular for this, pacing out the periphery and sketching the shape to get the angles, for subsequent transfer to squared paper. Measuring acreages of individual crops was even more difficult because the planting was so mixed. A plot was recorded as measurable where the foodstuff in question was a, or the, principal crop appearing in it in reasonable density and all over it. In the absence of any other figures except estimates which made no claim to be more than guesses, it seemed worth making even this rough and ready attempt and presenting the results, tentative as they necessarily are.

61. Table 6 gives total acreages for the four groups for which this information is available, again in order from south to north. They are given per active adult and per head of population. The number of active adults was calculated with allowances for feebleness in old age or partial disablement, such as late pregnancy, serious illness during the cultivation season, or a crippled limb. The effect of differences in the composition of the groups, *e.g.* proportion of children, is seen in the ratio of the columns for active adults and the whole group. The resettled groups, Ukua and Momboi, had a ½-acre cotton plot on each holding in addition to their food crops, and their total crop acreage was therefore of the order of 1.2 and 1.0 acres per active adult respectively. Double cropping was most extensive at Ukua; thus, although the acreage of land cleared for food crops is very similar in the first and second year settlements (0.68 and 0.72 acres per active adult), their crop areas show some difference (0.73 and 0.93) due to the differing proportion of the land cropped twice. See further in paras. 65 and 99ff.

(1) A polygamous home, in which the women cook separately and in turns but the whole household shares the food, is one eating-unit.

Double cropping was entirely absent in the last and northernmost group (cf. para. 108).

62. Table 7 deals with the distribution of the crops within the total acreage. The definition of a measurable plot given in para. 60 above should be kept in mind, and also the fact that these are largely overlapping figures due to mixed planting, *e.g.* maize and groundnuts, maize and sweet potatoes.

63. Table 8 is a tentative translation of Table 7 into terms of produce per head per annum and calories and protein per head per day(1), taking into account, as a matter of qualitative observation, the additional production referred to in the last column of Table 7. The maize figures in brackets are mere assumptions based on Taba—Ukua and Momboi being taken as Taba, Bo Road taken as one-third of Taba. The figures used for yields, given below, were selected after discussion with a number of people and consideration of all the circumstances. The table makes no higher claim than to give a rough indication of the amounts of produce the acreage figures may reasonably be expected to represent. For a critical discussion of it, see paras. 319 ff.

Yield Figures Used in Preparing Table 8

	lbs./acre gross	*nett*	
Eleusine.....	700	500	(Bo Road 600 and 430)
Maize		900	(Bo Road 700)
Sorghum		800	
Rice	1000	700	
Sweet potatoes .	6000	4000	(Bo Road 4500 and 3000)
Pulses		250	
Groundnuts.....	1000	750	(Bo Road 800 and 690)
Sesame.....		200	

V.—THE LIFE OF THE HOMESTEAD

CHARACTER OF THE SAMPLE GROUPS

64. The groups chosen for detailed study had distinct characters of their own and provided interesting contrasts.

65. The first-year settlement, *Momboi*, was naturally having a hard year, with a lot of building and new clearing to do, and its first experience of fitting cotton into its programme. It attributed to the move and the clearing of the cotton plots its failure to clear more land for groundnuts and to get more land ready in time to permit double-cropping (Tables 6 and 7). For the same reason, what was probably an unusually large proportion of its eleusine was late sown and therefore got caught by the early cessation of the rains. The homesteads, being new, were short of sweet potatoes for the dry season, and of course all cassava had to be fetched from the old houses; nor

(1) Raw edible portion.

were there any bananas in bearing. There was therefore greater interest than usual in the wild yams of the surrounding bush. Altogether, it was a worried and preoccupied group.

66. In strong contrast was the second-year settlement, *Ukua*, which was sitting back and taking life very easily—so easily, indeed, that it could hardly summon the enthusiasm to pick its cotton, much of which was bursting unheeded during the November visit. In both these new settlements I was surprised how freely and strongly the people expressed themselves to me about resettlement and cotton, feeling the one a burden not compensated by its monetary return, and being deeply suspicious of some hitherto unrevealed intention in the other.

67. The *Madi* group, seen on the eve of its resettlement, was prosperous with well-established homesteads ; its crops appeared heavy and exceptionally well forward so that it was much less vulnerable to the vagaries of the end-of-season weather. It was part of an area which had a reputation for producing a surplus of groundnuts for sale to deficit groups, such as the wage-earners at Yubu, either directly or indirectly through trade channels. It is unfortunate that I was not able to follow the fortunes of these families through the early stages of resettlement.

68. *Taba*, the group on which qualitative food recording was continuous throughout the year, was a peasant group modified not only in material ways but in outlook by close association with the wage-earners of Yubu Station and its own partial wage-earning. All of its families probably handled more money than ordinary peasant families, but naturally no direct information was forthcoming. The outer world had touched them all in one way or another. Some of the men were then employed in Yubu Station or had recently been so, or were intermittently (*e.g.* in the dry season) employed there or by one of the traders. Some had lived and worked outside the area, for example a retired policeman, an ex-soldier, or again an old man captured as a child by slavers and taken north where he had remained for many years after his liberation. With some marked exceptions, the group was uninterested in agricultural pursuits and had its face turned in a pronounced manner towards the supposed joys of a wage-earner's life. It was, however, noticeable that some of the ex-wage-earners in it seemed to have arrived at a sort of mean, combining elements of the new and disturbing money economy with appreciation of the independent feeling inspired by the sight of the year's food supply in the store or the ground around them. As a group, Taba was characterised by reduced and sometimes rather slap-dash agricultural activities and boredom with a peasant existence. Its total acreage was somewhat smaller than any other group, and its eleusine fields markedly so. It had more interest in groundnut production with a view to sale in Yubu. That the acreage figures showed up as well as they did was due to one or two exceptional cultivators, including one man who seemed to have got hold of the idea of farming as a livelihood in the new world of money. The other families did not really get beyond thinking on the scale of selling some nuts in driblets as the spirit moved the women, occasional brewing, taking a basket or two of cassava along to the bush-shop when

in urgent need of a few milliemes, and other transactions of a similar petty nature. This man and his family, at least in the survey year, definitely set out to produce a surplus of both grain and groundnuts, not for offering haphazardly in roadside markets but to be put by to await suitable opportunities for advantageous sale.

69. Life was considerably harder among the *Bo Road* people. They lived nearer the bone than any of the Zande, and as a group were accordingly more constantly preoccupied with problems of food supply and readier to go to some trouble to get a bit extra. Here and there in individual Zande homes a similar strain was in evidence, but as a temporary misfortune rather than a continuing state of life. The Bo Road women, comparable in height with the Zande, were markedly thinner, and the men showed a similar tendency, but less pronounced as a group and less consistent as individuals. Average weight for the women was 45 kg. against 50 for Zande women except at Momboi (48 kg.), where also living was hard that year.

CULTIVATION (ZANDE)

70. The year is divided broadly into the rainy season, dominated by agricultural activities, and the dry season, in which no single type of activity is pre-eminent throughout, interest being divided between hunting (even though regulated by restrictions), fishing, building and other crafts, and at the end, termite-catching.

71. The Zande have a reputation as good agriculturists with a wealth of empirical knowledge, skilled in making the best use of local conditions. Their season starts with planting maize, groundnuts and miscellaneous vegetables in March[1]. Maize sowing, always among other crops (groundnuts and eleusine) except on good midden mounds or other particularly fertile plots, is so distributed as to bring in a main harvest in July and August and a secondary trickle till the end of the season. Groundnut-sowing continues to mid-June in Yambio Sub-District and about the first week in July in Tambura Sub-District. The earliest sowings are out of the ground by August, in time to be followed by eleusine, while cucurbits grown for their seeds (*lagenaria*, *citrullus* and bitter cucumbers) follow part of the later crop lifted in September and October. Some families start sowing eleusine from June on, but the majority dally till August and the laggards optimistically go on even into September, though 31st August is officially regarded as the latest safe date. Easily the heaviest crops seen were those of Madi, where reaping began in the last week of September. The main harvest is in November and December. Cassava planting, like weeding, goes on intermittently throughout the growing-season. Pulses are not sown before late June or July, according to locality, for the heavy rain spoils them if sown too soon ; the plots are not often more than 100 sq. yds., for various fungus diseases are apt to wipe out larger plots in a few days. Sesame is either sown in separate plots in June or July, or broadcast with the eleusine ; plots of it are sometimes seen in the third or fourth year on land which is about

(1) For more detailed notes on individual crops, see Appendix II.

to be abandoned to bush. It appears that an early crop of *lagenaria* (*kpagu*) is sown among the maize in the southern areas, and *citrullus* (*datiro*) in July, but I saw practically none further north until the late planting after groundnuts. *Luffa* (*bangombe*) and *hyptis* (*andeko*) were commoner in Tambura Sub-District than further south, the latter broadcast with eleusine and the former set to climb over trees in the fields. Sweet potatoes, once established round a homestead, carry over from year to year, being harvested from September to April. A few yams are planted to climb over trees, fences or ridges round the homesteads.

72. There are several, or many, varieties of each crop, with varying cultural or storage characteristics, and sometime differences in culinary qualities and palatability. Information collected about them is briefly noted in Appendix II, a more detailed list not being reproduced here.

73. The pattern of crop succession is flexible, determined by results and the appearance of certain weed indicators, and often cut short by migration. The following description is taken from McCall (xi).

(*a*) *New Land*: The area cleared first is planted with groundnuts and maize during the first half of the rains. Clearing continues, small trees being cut usually leaving tall stumps, larger ones ring-barked, and the grass cut to lie on the ground till it is time to sow eleusine, when the brushwood and grass are burnt(1). The burning is regarded as very important to ensure a good yield. The rubbish remaining is collected in heaps and burnt, after which eleusine is sown on this area and on the area from which the earliest nuts have already been harvested.

(*b*) *Second Year*: If the land is good, eleusine may be sown again. If not so good, eleusine with sesame, a little maize and possibly sorghum. If it is eleusine and sesame, cassava may be planted through it to grow up for the

(*c*) *Third year*, when eleusine may again be scattered under it, the cassava leaves being stripped to reduce shade if necessary.

(*d*) *Fourth year*: The cassava is left to fend for itself.

74. Alternatively, the second year may be maize interplanted with *lagenaria* (*kpagu*) or cowpeas or sweet potatoes. This is usually done on plots near the houses. Eleusine, probably with cassava planted through it, is likely to follow the maize and *lagenaria*.

75. Another pattern, noted by me round Yubu, was as follows :—

(*a*) *First year*: Groundnuts with maize, followed by eleusine thickly interplanted with cassava.

(*b*) *Second year*: Cassava left to itself except that long grass may be cut once.

(*c*) *Third year*: Cassava lifted as required.

(*d*) *Fourth year*: As first year, but possibly thinner cassava.

(*e*) *Fifth year*: Eleusine if the cassava is not too thick.

(*f*) *Sixth year*: Cassava, untended, lifted as required. Land then abandoned.

(1) A stock of firewood may be set aside first.

76. Groundnuts cannot be repeated without two intervening years, otherwise they will be heavily infected with disease. Second-year plots on this rotation round Yubu were seen in May and June thickly dotted with diseased volunteer plants from nuts left in the ground at the previous year's harvest.

77. Cotton has been found to yield best if sown in May or June, but the bolls then open gradually while rain is still about, and the people complain that the rain spoils it. Their chief objection, however, is believed to be having to pick over a period and so they prefer to sow in July when it will open more or less in one flush in the dry season. The advantages of early sowing are stated to be :—

(*a*) better yield ;

(*b*) neither sowing nor harvesting clashes with other main crops ;

(*c*) damage by stainer is less likely and the longer dead season gives better control of pink bollworm ;

(*d*) buying is over before the termites fly, when the Zande become entirely engrossed with their ant-hills and will not bring cotton to market.

78. The programme is therefore :—

(*a*) plots all to be measured out in April ;

(*d*) plots all to be cleared in April and May ;

(*c*) seed distributed in May ;

(*d*) sowing should be done between 1st and 30th June, but in practice it is more like 15th June to 15th July. Its place in the year's work will be further examined in relation to other occupations later (paras. 97ff).

79. An average return on the usual ½-acre plot is reckoned as 300 lbs. of seed cotton, which, if grading out 70% first grade, 20% second grade and 10% third grade, brought the cultivator a little under LE.2 in 1947. An industrious family on good land, growing an acre yielding 1200 lbs., would get about LE.5. Yields are found to vary from 100 lbs. to 800 lbs. per acre, but one cannot help wondering how much failure to pick may have to do with the lowest yield figures, especially as the example of low yields quoted to me was the very area where I noted the failure to do so in November.

80. Certain crops, sweet potatoes and yams, are regarded as women's crops, and men will not touch them; they are seen only as volunteer plants round the houses of men living alone. In other cases, certain tasks are done only by women, such as weeding and possibly lifting groundnuts, but sufficient store is set by this crop for men living alone to disregard custom and to cultivate a patch for themselves.

81. Broadly speaking, men do the heavier clearing jobs, women the bulk of the weeding and harvesting ; other tasks may be shared. Each woman has her own fields but normally there is mutual help. The produce is called hers, " So-and-So has gone to market to sell her nuts." The beer she makes from her grain is hers and sold by her. In large households usually, and in small ones sometimes, there are also plots called the husband's, which his wives help him to cultivate but the produce of which is separately stored as his, to be drawn by him for sale, for meeting social obligations, or as a reserve.

82. A point which bears on energy expenditure, fatigue and efficiency is the unusually awkward nature of the main implement of agriculture, the hoe. In the first place, the blade is extremely small, and secondly, it is set in a short shaft bent at an acute angle in the middle-actually the two arms of a forked branch. This necessitates working in extremely fatiguing stooping postures in which it is impossible to bring the weight of the body into play. All the drive comes from the muscles of the arm and upper body. Similarly the axes are light and small and are wielded with short movements of the arm only, without a proper swing from the body by which part of the work would be done by the body's own weight.

OTHER OCCUPATIONS (ZANDE)

83. Building and repairing(1) begin when the rains slacken in October and November, but many people put it off till later and then, after the bush fires, have a job to find thatching-grass.

84. Fishing is at its busiest as the streams fall, and the women, having got their harvest safely carried and stored, can afford to spend whole days on end at the pools, but it is all on a small scale as the consumption figures show.

85. Meanwhile, after the bush fires thin the vegetation, some of the men go hunting. To protect the young animals, the Administration has forbidden the use of nets for hunting between October and May, a measure bitterly resented by the Zande because the dry season is the time when they feel most in need of stew materials and the menu is most restricted. Over and over again I had to disillusion them of the not unreasonable hope that a food investigator worth her salt would surely be able to help here, and to tell them that however much I sympathised with them I could not do anything about it. A big grievance it certainly is with them, but how far it is really a hardship it is impossible to say, because I could get no reliable comparison with the past. Despite the restrictions, but not necessarily in contravention of them, the dry season remains the season when meat is somewhat more frequently available compared with the season of dense vegetation and agricultural work, though it seems to vary very much from place to place.

86. After the grass is burnt the small boys too get busy chasing vermin and other small creatures for the pot.

87. Finally, after the first storms at the end of February heralding the break-up of the dry weather, the termites begin to fly at night, and intense excitement prevails in the homesteads as people start patrolling their ant-hills, near or far, to watch for signs that the

(1) The Zande reckon a properly built house to take 30 men-days, including fetching and preparing the materials. This is divided into 10 for the wall and main poles, 10 for the roof structure and 10 for the thatch. A good house, with due attention to repairs, should last ten years, a store hut five or six unless the supports are of ant-resistant timber. A man and wife with only two huts and a store must devote about 25 days each year to building and repairs, assuming the oracles do not require them to flit and start from the beginning again. It is all men's work except fetching thatching grass (either sex) and smoothing the floor (women).

swarming flight is imminent and to ensure that they are on the spot at the right moment. This is probably the only business in the year's round in which the Zande exhibit punctuality, promptness and precision, and it goes to show what wonders can be worked by interest and the conviction that the results are well worth the labour-costs.

88. Detailed notes on all the above will be found in Appendix II.

89. Domestic affairs are reserved until the following sections on foods and feeding. It only remains to add a blessed idleness (and sleeping) to the list of occupations, for the whole of life is lived at a slow pace, and at any time of day some people may be found asleep or sitting contentedly day-dreaming in their compounds.

THE WORK CYCLE (ZANDE)

90. The year's round of work is schematically presented in Fig. (*a*), in which the lines indicate not continuous work but the period over which any operation was observed. Local variations occurred within this spread, with a general tendency to begin and finish planting later towards the north, as might be expected from the rain curves (Table 1). Broken lines indicate more or less sporadic occurrence, in advance of or after the main season. For instance, tired of the dry-season lack of vegetables or with store-houses running short for any reason, some families took advantage of the very first heavy storms in late February to throw up ridges around their homesteads and clear small plots on low-lying land for a small preliminary sowing of maize, groundnuts and vegetables. But after an initial outburst of activity the great majority settled down to a dawdle with a limitless vista of to-morrows in front of them, until roused to a scramble to get the last groundnuts planted in June, and to a still greater scramble to finish preparing the grain fields in August.

91. A striking feature of the cycle, compared with that of many tribes, is the overlapping and lack of definition of the seasons, and the unusual latitude in sowing times. This in itself encourages dawdling and pottering. The Zande need not—as many communities must—discipline themselves to a time table of strict and narrow limits, imposed by nature under penalty of hunger. The sense of real urgency which haunts and drives other tribes in the early rains was absent in most families, and even later the consequences of failure to make up for lost time in the last few weeks of the planting season were not viewed with any grave apprehension, for there was always food in the ground to fall back on—cassava and sweet potatoes—and one could scrounge here and there, or go and do some work for one's relatives in return for food or for the Government for cash. Somebody wrote me an essay on the charms of Zandeland, in which the District Commissioner was portrayed as engaged in constantly repelling would-be immigrants from less favoured districts, for in Zandeland a man could eat and hardly ever work. Despite this idyllic picture, families did at times go hungry and become very miserable for a period. But speaking generally, the wide latitude allowed by nature in their work cycle should, it seems to me, be accounted one of the complex of factors contributing to the happy-go-lucky Zande attitude to food and work, which in turn is

reflected in the astonishingly haphazard manner in which their domestic affairs are conducted (para. 189).

92. The picture of the year's round given by the chart is qualitative, and an attempt was made to supplement it by recording the principal daily activities of each individual in half a dozen families. This set of records suffered manifold misfortunes, and though it was useful in supplying a good deal of qualitative data and corroboration of other observations, no table could be constructed from it.

93. A rough idea of the position was, however, obtained by recording for each household every day the fact that some time had or had not been spent (by any member) in certain ways. The results are set out in Table 9, as percentages of the total recorded house-days, and show the proportion of days on which the families claimed to have devoted time to (*a*) agriculture, (*b*) work other than routine domestic tasks. Under (*b*) come building, making pots, chairs, implements, etc., hunting and fishing but not termite-catching. It does not include going to market, or the Chiefs' court, or brewing or any other social pastimes(1). The record was affected by the fact that some of the unrecorded days were unrecorded precisely because people were busy at one of these occupations and so could not be found by the recorder, *e.g.* away in distant fields or at the river. But with all its limitations, it shows a work curve in general agreement with other observations so far as its shape is concerned, even if it is all somewhat too low. For instance, the later start to the season as one goes northwards is reflected in the March agricultural figures for Taba compared with Momboi and Ukua ; the particularly early eleusine harvest noted at Madi shows up in the greater October activity there compared with Momboi and Taba, which were then only lifting some of their groundnuts and doing a little desultory weeding of their late eleusine fields. Again, the August scramble in Taba shows up very clearly, with the lesser one over the groundnut planting in June.

94. In the column for special tasks, the Taba figures for February and March include 21% and 23% for fishing respectively, and 14% and 13% for building. No hunting was recorded for Taba, for the families were able to buy dried meat brought over from French territory. The Momboi and Ukua figures reflect one of the differences between a first and second-year settlement, for Momboi had a lot of building to do and Ukua very little. Their figures for fishing and hunting in March were all small, Momboi 3% and 2% and Ukua 4% and under 1%.

95. It soon became apparent both from the few detailed work records and from personal observation that one group in the community did not pull its weight. It had a large mouth but idle hands. The group was the older adolescent boys and young unmarried men. They would feed in their mothers' homes, live nearby in small houses of their own, round which they might plant small gardens of odds and ends for snacks, chiefly sweet cassava, and sometimes they would cultivate token plots of food alongside the family fields as well as putting in odd days here and there on the family cultivations. In the new settlements, they would

(1) I had hoped to make it include some of these things, but my recorders were not adequate.

often take up an independent holding in the " line," growing little or nothing on it save the cotton plot and relying on their mothers for their food. They drifted round the homesteads, hung around the bush-shops, turned up hopefully at social gatherings, wandered off to " town." From their ranks come, of course, a large proportion of the hangers-on scrounging a living on the fringes of wage employment (see paras. 193, 210, 152). It is said, probably with truth, that in former times they used to serve the chiefs, not only in fighting but in cultivating large fields of grain for the chief's food reserve. Conditions have changed, Government buys grain stocks for reserve, cassava is everywhere, the powers of the chiefs over the lives and labours of their subjects are curtailed, and thus, it would appear, this age-group, no longer called on for public service yet remaining as before more or less outside the family work cycle, finds itself in the happy position of getting something for practically nothing. Its older members get called out, of course, with the rest of the men for their month of paid service to Government, as their turn comes round, but for the most part they contrive to eat the fruits of other people's labours.

96. The call-up of the men in turns for essential Government work, for a month at a time, caught some families on the wrong foot from the point of view of their own family work. The summons always appeared to drop on them out of the blue, without notice, and I never knew whether this was really so or whether they had merely not taken the trouble to look ahead and adjust their own programme accordingly. Groups being resettled were exempt from this call for the first year.

97. Turning to the question of fitting cotton into the pattern, it will be seen in Fig. (*a*) that the clearing in April and May coincides with the initial bout of clearing and planting food crops. True, Table 9 suggests that this probably occupies each family only about three days in the week, but what is much more important is that it coincides with the nadir of the curve of energy intake (Tables 21 and 26 and paras. 7, 244, 292), when people were finding three days a week (if in fact it was no more) of the heavy tasks of that season a very real burden. They were losing weight and feeling overloaded with work—as their weight losses showed they indeed were, relative to the energy intake of the moment. There were other times when they were busier in terms of time (Table 9), but not necessarily in intensity of work, but at such times they were feeding better(1). Certainly no period was comparable to the early rains for stress. It seems therefore that the dislike of early cotton-planting may very likely be created partly by the fact that at least in the first year it involves that much extra clearing of new land at the worst possible moment. Things adjust themselves better in subsequent years when the old cotton plot is available instead of new land for the early groundnuts, The preference for a later cotton crop, which bursts in one flush instead of gradually, is also understandable because of the clash with their normal seasonal occupations. After the long cultivation period they do not want to be still anchored to their homesteads. On the other hand, the actual planting time seems to fit in better early than

(1) By the end of June they were feeling more cheerful and saying, " The pumpkin leaves are here again, we shall soon be getting fat."

later, when laggards would be trying to catch up lost time in their grain fields.

98. It seems unfortunate that the burden of the first year of cotton should have to be borne in the very first year of resettlement, when all their land is new and the work of clearing heaviest. Relief is given in the form of exemption from Government labour calls throughout the first year, but this would not relieve the specific point of pressure.

99. One expected result of cotton-growing was seen working out according to plan in Ukua. The cotton is uprooted and burnt in February, leaving a clean plot of land ready for the first rains. It seemed likely that this would lead to a bigger early sowing of groundnuts, and therefore more of the crop would be lifted in time to be followed by eleusine. The proportions of land double-cropped in Ukua in 1947 bore out this expectation, and, by the way they were starting the 1948 season, Momboi looked like going the same road in their second season.

100. The precise effect this will have on total groundnut production is difficult to estimate, for it would of course be rash to reckon the cotton plots as an unqualified increment. The crop is weeded and possibly lifted exclusively by women, and this limits the total area which can be undertaken. Groundnut acreages per active adult were found to be 0.18 at both Ukua (second-year) and Taba (not resettled), with only 0.08 at Momboi (first-year) (Table 7). What either Ukua or Momboi planted in the year preceding re settlement is unknown, and the following considerations rule out direct comparison between these three places in 1947 :—

(*a*) The Taba group, with its way of living modified in the direction of a money economy, was growing this crop partly with a view to sale in Yubu market, and may well have grown more than a true peasant group, making room for this in its programme by reducing its eleusine fields (Table 7).

(*b*) The Momboi group considered its groundnut acreage to be below normal due to congestion of work early in the year.

101. Groundnuts are an outstandingly important food crop, more especially with a diet based increasingly on a staple of such poor quality as cassava, and production for home consumption needs expanding to level up supplies through the year before any should be regarded as legitimately surplus to local requirements. The new cotton rotation is evidently encouraging this as expected, though what limitations labour questions may impose or how far its effects may be offset by reductions either in the amount of other land devoted to groundnuts or in the production of other crops, only time will show. It is a point to be watched, and the position at Taba gives a danger-signal, for more groundnuts at the expense of grain (which in turn means more cassava in the diet) would merely be a nutritional vicious circle, liable to aggravation by external sale of the additional groundnuts produced.

102. Where measured plots of food crops for sale are to be cultivated instead of cotton, as in the most recently resettled areas, similar points will require watching in regard to reaction on the home food supplies, and the question of pressure in the first year in particular.

CULTIVATION AND WORK CYCLE (BALANDA)

103. The Balanda pattern of agriculture and other occupations may be described as the Zande pattern modified by environment. The chief differences in crops were that they grew as much sorghum as eleusine, fields of sesame in pure stand or with cassava planted through it, and some sizable plots of cowpeas and earthnuts. Cassava I found well established, contrary to what I had been told, but like the rest of the vegetation it was less luxuriant in its growth and did not develop into a jungle with bush and other remnants of cultivation on the sites of former occupation.

104. The homesteads looked barer in that they lacked the tangled profusion of miscellaneous cultivation round established Zande homes, but on the other hand they were flanked for half the year by patches of towering sorghum, always planted near the houses because of the need to guard it against birds. The Balanda claimed that they planted it on the same land year after year, maintaining fertility by burning the trash and other rubbish just before planting. My specific enquiries into individual families covered occupation periods up to six or seven years.

105. Some elderly informants of the Bo Road group stated that in their childhood bulrush millet had been the staple food, and *Citrullus* (*datiro*) had been widely grown, as among the Zande. According to them, yields fell off with the appearance of certain weeds and so these crops were virtually abandoned, eleusine and sorghum being adopted from their neighbours to replace the millet. The latter is still planted sporadically through the eleusine, but plants seen in 1947 were heavily infected with a black mould.

106. The succession of crops is neither as long nor as complicated as among the Zande. Except for their sorghum patches, the Balanda say they cannot cultivate land for more than two years—either sesame or groundnuts the first year, followed by eleusine in the second[1]. This means more constant clearing of new land. Moreover, the acreage cleared per active adult was found to be larger than in the Zande groups (Table 6). But against this must be set the lighter vegetation which makes clearing less arduous.

107. The principal bitter cassava (*karangba*) is of fifteen months' growth against the twenty-seven months of the *gbazamangi* of the southern Zande, so it was possible for them to fit cassava into the two-year scheme as well as planting it among the sorghum and mixed cultivation round the house.

108. The Balanda year is presented in Fig. (*b*). It shows the seasons more sharply defined than among the Zande, with much less latitude in planting times. With the later onset of the rains the first groundnuts are not planted early enough to be out of the ground in time for eleusine to follow. Whether in any case soil conditions would permit double-cropping may be doubted.

109. Guarding the fields from the depredations of various kinds of animals or birds was a not inconsiderable task in the Bo Road group,

[1] I am not clear how the pulses fit into this.

whereas among the Zande there was relatively little trouble of this kind. Mention has therefore been made of it in the Balanda chart but not in the other.

110. With regard to Table 9, the February-March figure for special tasks includes hunting (11% of the house-days recorded) and fishing (21%). There was more hunting in the Bo Road area all the year round than further south, and a hunter was stationed in the neighbourhood to supply dried meat to the Chief in Tambura.

VI.—THE FOODS AND THEIR TREATMENT

A.—GENERAL

111. Throughout this report, foods are grouped in the following categories :—

Cereals
Starchy roots and fruits
Pulses
Oilseeds
Oils
Animal products
Vegetables, leafy and other
Juicy fruits and stems
Miscellaneous.

This section does not therefore start with cassava, which is nowadays the foundation of the diet, as a glance at Fig. (*d*) will show, but with eleusine, which appears to have been dethroned from its place as the main staple within the last generation. There is a good deal of evidence pointing to marked shrinkage of eleusine production within that period.

112. Briefly, the basic pattern of feeding in ordinary peasant homes is one meal a day of stiff porridge, accompanied preferably by a vegetable, meat or fish stew, with a sauce enriched by a paste made of groundnuts, sesame or termites ; and additional foods in the way of fresh cassava, sweet potatoes, maize on the cob, groundnuts as required and available. It will be more fully described in the next section under domestic affairs.

113. A list of food and other useful plants is attached as Appendix I. It is long, but as will be seen later, the range of foods ranking as significant items in the diet is comparatively narrow. It became clear in the course of the survey that the use made of wild products by ordinary households was with rare exceptions negligible, and that in general these were of interest only to the traveller, hunter or other person temporarily outside the normal pattern of domestic life—and of course to the collector of curiosities.

114. Particulars of the production and utilisation of the various foods will be found in Appendix II. Numbers in brackets there and after plant names in the text refer to the plant list in Appendix I.

CEREALS

115. *Eleusine* (3), *maize* (4) and, among the Balanda, *sorghum* (8), are the principal cereals. As foods, eleusine and sorghum, which may be used mixed, are made into flour for porridge ; maize is mainly eaten on the cob, but is occasionally also used as flour for porridge or unleavened bread. A few more sophisticated families, either wage-earners or with other extra-tribal associations, sometimes make refined maize and sorghum flours and even *kisra*(1). Porridge of eleusine alone is not favourably regarded except by some of the older people, who have been brought up on it ; most eleusine flour now is eaten diluted with cassava to a varying extent, commonly three parts cassava to one of eleusine. All three grains figure prominently in brewing, nearly all the Zande maize crop not eaten fresh on the cob being reserved for this purpose, while eleusine is always in demand as malt for other beers, as well as itself making the most highly esteemed beer of all (see Section IX).

116. Dry *rice* (2), a recent introduction from the Congo, was seen in tiny plots chiefly at Momboi, and is reported to be on the increase round Yambio where, besides the demand for it in the town, the country people are said to be acquiring a taste for it.

117. *Bulrush millet* (5) was seen as an occasional interplant in eleusine fields, especially among the Balanda where it was chiefly used for mixed grain beers.

118. Heads of *sweet sorghum* (1) which have not been cut green for the sweet stem are reaped and used like other sorghum.

119. *Penzi* (6) and *tudu* (7) are two tall grasses found, apparently, only in some rocky hills about fifty miles north of Tambura. Their seeds, not unlike rice grains, are collected in season and regarded with considerable favour locally.

STARCHY ROOTS AND FRUITS

120. In this class cassava leads the field by miles with sweet potatoes as runner-up and the rest practically non-starters.

121. *Cassava* (15) dominates the whole diet, bitter varieties for flour and sweet for roasting or boiling or, occasionally flour. Among the southern Zande the principal bitter cassava, *gbazamangi*, is slow-maturing (twenty-seven months) and susceptible to mosaic. The northern sub-district has switched to *karangba*, introduced from French Equatorial Africa in recent years, maturing in only fifteen months, highly resistant (so far) to mosaic and slightly less protein-deficient than the other—2.7% (in the dry cassava) against 1.7%. (Cf. with cereals ranging from eleusine 4.9% to sorghum 12.9%). *Karangba* is exceptionally bitter and is said to be shunned by wild pigs, for which reason it can safely be planted in fields at a distance from dwelling-houses. Among the sweet cassavas, the one which predominates heavily throughout the district has spread in fairly recent years from the west because

(1) A pouring batter spread wafer-thin on a hot greased iron sheet. Introduced from the N. Sudan.

it matures in only nine months; its protein content is exceptionally poor, only 0.9% (at a moisture content comparable with the instances given above). The ease with which varieties of cassava(1) find their way in from the west and establish themselves in Zandeland provides a good exemple of the readiness of the Zande to try something new when its qualities attract them, and brings us right back to the essential questions of interest and attractiveness in dietary innovations.

122. *Sweet potato* (9) varieties are endless, with seven common ones. Claims were made that red ones could be found, but on enquiry those produced for inspection were never more than red-skinned. Some pale yellow ones were seen. Their vitamin A contribution to the diet was therefore problematical and was a point which I ought to have had cleared up, because the use of suitable varieties would safeguard vitamin A in the dry season. Sweet potatoes are boiled and roasted and eaten alone or dipped in a paste of groundnuts, sesame or termites.

123. *Yams* wild and cultivated (13, 16, 18, 18*a*) were in use to a small extent, the interest taken in them being usually in inverse ratio to prosperity. They are treated like sweet potatoes. *Cocoyams* (17) from the occasional clump in the homestead garden may be eaten a couple of times in the year. The same is true of other *tubers* from the bush (10, 11, 12).

124. *Bananas* (14) are a subsidiary food for which conditions are most favourable in the southern areas, though yields are poor even there due to lack of mulching, a practice very seldom followed though its value is recognised. For the most part the ripe fruits are eaten raw, but there are also plantains for cooking either green or ripe. They appeared seldom in the peasant food diaries but are bought readily by wage-earners and travellers.

PULSES (19-24)

125. *Peas* and *beans* are foods in which the Zande take extremely little interest. The range with which they are familiar is small—cowpeas, mung beans, earthnuts and to a lesser extent lima beans—and they have none of the many varieties of kidney beans so common in some tribes. On the cultural side, their cowpeas and mung beans are liable to be wiped out by fungus diseases if grown in large plots, and in addition, people are usually short of seed of cowpeas and earthnuts because of heavy storage losses. On the domestic side, interest is slight and cooking unenterprising. Older women will sometimes make a good sauce of pounded beans, but younger ones and especially the more sophisticated say it is too much trouble. The only alternative is an ungarnished and unaccompanied dish of pulses or of mixed cowpeas and maize. It was thus an intrinsically unpromising field for a soya bean campaign which was attempted in recent years, even if this had not been further handicapped by an unfortunate choice of variety which caused indifference to harden into positive antipathy. This state of affairs is the more regrettable in that, from the cultural point of view, soya beans seem promising in this area and from the

(1) Similarly, *mangirima* groundnuts and varieties of okra.

nutritional point of view they would make a valuable contribution all round and particularly at two weak points in the diet—protein and riboflavin. The key problem seems to be attractive presentation which involves finding varieties satisfactory in the kitchen as well as in the field. Otherwise it seems unlikely that soya will ever be found outside those institutions where the consumer has to put up with, if not enjoy, what he gets.

126. The Balanda cultivate larger patches of the same peas and beans as the Zande, sometimes as much as half an acre.

OILSEEDS AND OILS

127. *Groundnuts* (26) among the Zande and *sesame* (38) among the Balanda are the principal oilseeds eaten,(1) each with the other as a secondary. These are supplemented by *cucurbit seeds* (27-33, 36), chiefly *lagenaria* and *citrullus*, and *hyptis* (25), and the very occasional use of *forest products* (37, 39*a*). Oils appeared in the peasant records very seldom, but their use tended to increase somewhat with sophistication. *Sesame oil* is the commonest everywhere. The Balanda like *meni oil* (39) and *shea nut oil* (34), collecting the nuts (in a small way) in their respective seasons; the Zande have very little of either. *Termite oil* is highly prized and may be hoarded for special occasions through the year. *Red palm oil* (35) is a rarity outside institutional feeding.

128. Oilseeds are roasted and ground, often with salt and chillies, to an oily paste for use as such or for dilution with water to make a sauce. Groundnuts and cucurbit seeds may be eaten alone after roasting, and freshly lifted groundnuts may be boiled in their shells, then shelled and eaten as a dish by themselves.

ANIMAL PRODUCTS

129. Small amounts of animal products appear in the Zande diet through the year, irregular as to quantity, frequency and locality.

130. *Meat* shares with termites the place of the most highly prized food in Zande estimation. Its more usual forms are scarce, but practically anything which can be caught and cooked goes into the pot—tortoise, several snakes, frog, crocodile, snail, crab, bushrat, fieldmouse. Traders bring in cattle on the hoof for slaughter at centres of population, and occasionally a beast from the small dairy herds maintained in Government and Mission stations is killed for meat. The peasants depend for their supplies almost entirely on hunting. Meat, fresh or dried, is first boiled alone and then cooked with a suitable sauce to make a stew for eating with porridge.

131. *Birds*, domestic or wild, are a very minor article of diet. The poultry population is small and subject to devastating epidemics. Chickens are mostly kept for the poison oracle, *benge*, and are not unfit for eating when killed in this manner. Occasionally they are killed

(1) In the case of the Balanda, the food records (Table 19) disagree with the cultivation records (Table 8). Sesame not only figured much more prominently than groundnuts in the food records, but some was also available for sale.