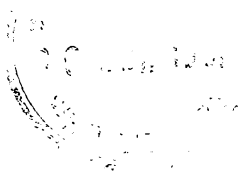


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SOME ASPECTS OF HUMAN ECOLOGY IN AFRICA RELEVANT TO
THE PLANNING OF MALARIA ERADICATION PROGRAMMES

by

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In a recent paper in the Bulletin of the World Health Organization it was argued that greater attention needs to be given to geographical reconnaissance in the planning of malaria eradication programmes (Prothero, 1961).

"... the ways in which the population is distributed, settlement patterns, house types, farming practices, communications and water supply (with other factors of probably lesser significance) may be of vital importance in a malaria eradication campaign."

It is vital that a thorough investigation and evaluation of these factors should be made for every area in which work is to be undertaken. In Africa, where this need has been studied, it would be a serious mistake not to take into account the peculiar circumstances that are likely to exist in individual areas. Generalizations based on experience which has been limited to one area can be very dangerous. The African environment may give the appearance of being uniform over great areas but detailed studies prove this to be a false assumption. Rainfall and the resulting water conditions, which may be important factors in vector breeding, may vary significantly over distances of only a few miles. These variations apply not only to the amount of rainfall but also, and probably of greater importance, to its incidence and reliability. Similarly for African peoples generalizations may be dangerously misleading. Clans, tribes, chiefdoms and kingdoms in which people have been grouped in the past, remain important divisions at the present day even with the development of African nationalism and the emergence of independent states. Between these groups social relationships, religious beliefs and economic activities vary enormously. Common origins and contacts between groups may have produced some common traits but the importance of individuality cannot be over-stressed.

The malariologist who fails to take full account of environmental variations and human peculiarities in the area in which he is planning malaria eradication does so at peril. More than two years after the start of the malaria pilot project in the Awash valley in Ethiopia, the sanitarian wrote of spraying operations in his annual report:

"It is not certain that total coverage was obtained. This can be attributed to the need for a proper geographical reconnaissance and the lack of adequate maps, the scatter of localities and dwellings, water problems and the lack of community life."

These are appreciable problems which should have been revealed in the earliest stages of planning the project by thorough geographical reconnaissance, carried out in conjunction with malariological and entomological investigations. Problems such as these cannot be solved easily, patterns of settlement cannot be changed because they hinder malaria eradication, but it is essential to know that they exist and that provision will have to be made to contend with them.

While stressing the importance of detailed investigations of environmental and human circumstances, there is something to be said for being able to place the results of these within a wider context for purposes of comparison and greater appreciation. Also the wider and overall view allows for a better understanding of what may be encountered in terms of variety and differences. It was with these ideas in mind that the following maps of the whole African continent were prepared.

1. Tribal groups.
2. Types of subsistence economy.
3. Types of settlement pattern.
4. Types of dwelling.

They are all based on the work of an American anthropologist, Professor G. P. Murdock, who has recently attempted a synthesis of existing knowledge of the social relationships, religious beliefs and economic activities of African peoples (Murdock, 1959). He has drawn upon a wide variety of sources for this work. Obviously it is possible to criticize some of the interpretations that he makes of this material but for the purpose here these are unimportant. It is important that within the compass of this book a great amount of information is presented which is

relevant to malaria eradication, though all the relevant aspects of geographical reconnaissance are not considered. There is very little information on the physical environment, none on the distribution of population, on water supply or on communications, and nothing on the modifications of traditional African life by modern economic development and other influences from outside the continent. Notwithstanding the absence of this information Murdock's book can be recommended as essential reading for those engaged on malaria work in Africa.¹ From it they will appreciate the variety of human differences and the relevance of many of these to their work.

The map of tribal groups is a copy of a map prepared by Professor Murdock. It illustrates clearly the complexity of tribal groupings, their great number and the high degree of fragmentation that exists, particularly in some parts of the continent (e.g. in the eastern parts of Nigeria and the adjacent areas of Cameroun, and in the area of the Congo/Nile watershed). In spite of its complexity this map is a simplification of the actual situation which is far more complex.² Tribal groups do not in fact occupy well-defined areas with rigid boundaries within which homogeneous conditions are to be found. From time immemorial mobility has been a feature of the life of African peoples and this continues up to the present day. There has been a continuous mixing together of peoples. Though a particular group may predominate in an area there will also be minority groups living amongst them. These minority groups may number only a few people but they will still maintain certain features in their ways of life which will differentiate them from the main group and from one another.

A feature which is clearly illustrated from the map of tribal groups and which needs to be emphasized, is the way in which international frontiers so frequently divide groups (see also Barbour, 1961). This is something to be looked for when preparing plans for malaria eradication, if the projects are based on national territories. With people of the same group living on either side of a frontier, of which they take little recognition, the likelihood of movement backwards and forwards across the frontier is increased considerably.

¹ Each chapter in the book has a useful bibliography but it is unfortunate that there are not more adequate references in the text.

² See, for example, any one of the monographs of the Ethnographic Survey of Africa published by the International African Institute.

Professor Murdock expressed the hope that the map of tribal groups would be used as a base for plotting various other distributions and this is what has been done to prepare the maps of types of subsistence economy, settlement pattern and dwelling. They are published here with Professor Murdock's permission, for which grateful acknowledgement is made.

It has been possible to take into account only the broadest distinctions in the map of types of subsistence economy to distinguish between the cultivation of crops and pastoral activities and sedentary and nomadic (including transhumance) ways of life. Various combinations of these elements are found in African economies. Others such as hunting and collecting, oasis cultivation and fishing require separate recognition though they are practised by many fewer people. The cultivation of crops is a "sedentary" activity only by comparison with the nomadism of pastoralists. In many African communities who practise what may be termed sedentary cultivation there is a considerable degree of mobility of the population involved in the farming activities at different periods in the agricultural calendar.

From about latitude 10°N to latitude 10°S sedentary agriculture appears on the map as the economic activity of the majority of the tribal groups. It would be a fallacy to suppose that there is anything approaching uniformity in their agricultural practices. These vary widely in respect both of crops grown and of cultivation methods employed, these depending on such factors as the conditions of the physical environment and on social and economic factors. In the classification used on the map no account has been taken of the modifications of subsistence economies which have resulted from the development, and in some instances the introduction, of cash crops. This modification is particularly important in West Africa. The map does not show areas in North, East, Central and South Africa which have been settled and developed by European farmers. The complete change in some areas from agricultural pursuits to other forms of economic activity is not shown. These changes which have come about in the present century affect limited areas to varying degrees. Most African peoples practise subsistence economies which have been modified to some extent but the map still presents a valid picture for much of the continent.

The map of types of settlement patterns requires little comment. The categories used are generalized and would need to be modified to provide greater detail in the study of smaller areas. A combination of patterns is shown only in the case of tribal groups in Northern Nigeria and immediately adjacent areas which the author knows well in the field. Here towns, villages and hamlets are a feature of the settlement pattern, with a tendency to dispersal into compounds and houses particularly in areas where there are dense concentrations of population (in parts of Kano, Katsina and Sokoto Provinces in Northern Nigeria). In any part of Africa it is unlikely that any one type of settlement pattern will be exclusive. In areas that are shown to have a predominantly dispersed type of settlement pattern there are occasional compact settlements, usually small towns which function as administrative and commercial centres. In the areas shown with oasis towns combined with nomadic settlement the former are few and far between and the latter is sparse also. The map shows indigenous African settlement patterns and throughout the continent settlements developed by Europeans and through their activities have been superimposed upon the traditional forms. Although their influence in particular areas may be important they modify the general situation to only a small extent.

The major distinction to be made in types of dwelling is between those that are movable and those that are fixed. Further division of each group can then be based on the materials from which the dwellings are constructed. Some combination of types is shown on the map but it will be appreciated that in detail the extent of this may be much greater and more subtle than can be shown here.

It is unnecessary to emphasize the importance of a thorough knowledge of settlement patterns and types of dwellings for the planning of a malaria eradication programme. The former have a direct bearing on the logistics of a programme and on the need to obtain complete coverage in either the application of residual insecticides or the administration of drugs. The fixed or movable nature of dwellings and the materials from which they are made are of great significance in the application (again involving the problem of obtaining complete coverage) and effectiveness of residual insecticides.

These maps are based on material from Murdock's book which has been selected and mapped because of its particular relevance to those concerned with the work of malaria eradication in Africa. They are provisional maps, for it would be impossible

to prepare anything definitive for the whole of Africa, and comment and criticism of them will be appreciated.

Note. The maps were compiled by the author and were drawn at the Department of Geography, University of Liverpool by Miss P. J. Treasure and Mr J. Lynch.

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Barbour, K. M. (1961) in Barbour, K. M. & Prothero, R. M., ed., Essays on African Population, London

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SUMMARY

It has been argued recently that more attention needs to be paid to geographical reconnaissance in the planning of malaria eradication projects. This requires detailed work in the particular areas concerned and generalizations on either the physical environment or on people are dangerous and may be misleading. It is, however, useful to be able to consider detailed information within a general context and to have an overall view of certain factors. For these reasons maps of Africa, showing the distributions of tribal groups, subsistence economies, settlement patterns and types of dwelling, have been prepared. These are important factors to be considered in the planning of malaria eradication. The maps are based on material collected and presented by an American anthropologist, Professor G. P. Murdock, (1959) in Africa: its people and their culture history, New York. This book might be essential reading for all those engaged in malaria eradication in Africa.

The purpose of the WHO/Mal Series of documents is threefold:

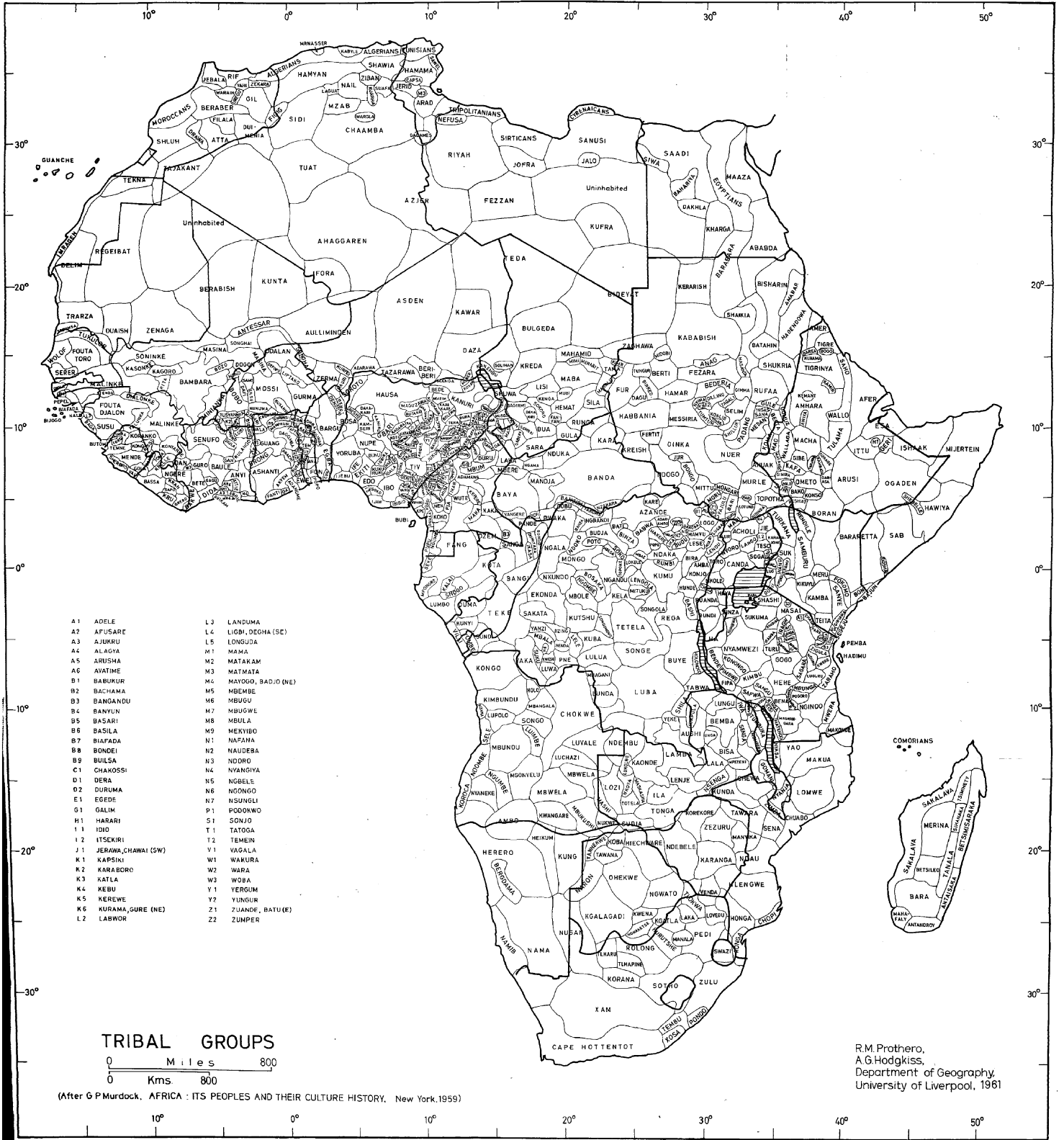
- (a) to acquaint WHO staff, national institutes and individual research or public health workers with the changing trends of malaria research and the progress of malaria eradication by means of summaries of some relevant problems;
- (b) to distribute to the groups mentioned above those field reports and other communications which are of particular interest but which would not normally be printed in any WHO publications;
- (c) to make available to interested readers some papers which will eventually appear in print but which, on account of their immediate interest or importance, deserve to be known without undue delay.

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NOTE:

In the four maps of Africa showing the different aspects of human ecology on this continent, the present frontiers of countries and territories are shown in red. An additional map gives the names of these political units. The shaded area of this map indicates the WHO African Region, the unshaded area is within the Eastern Mediterranean Region of WHO.



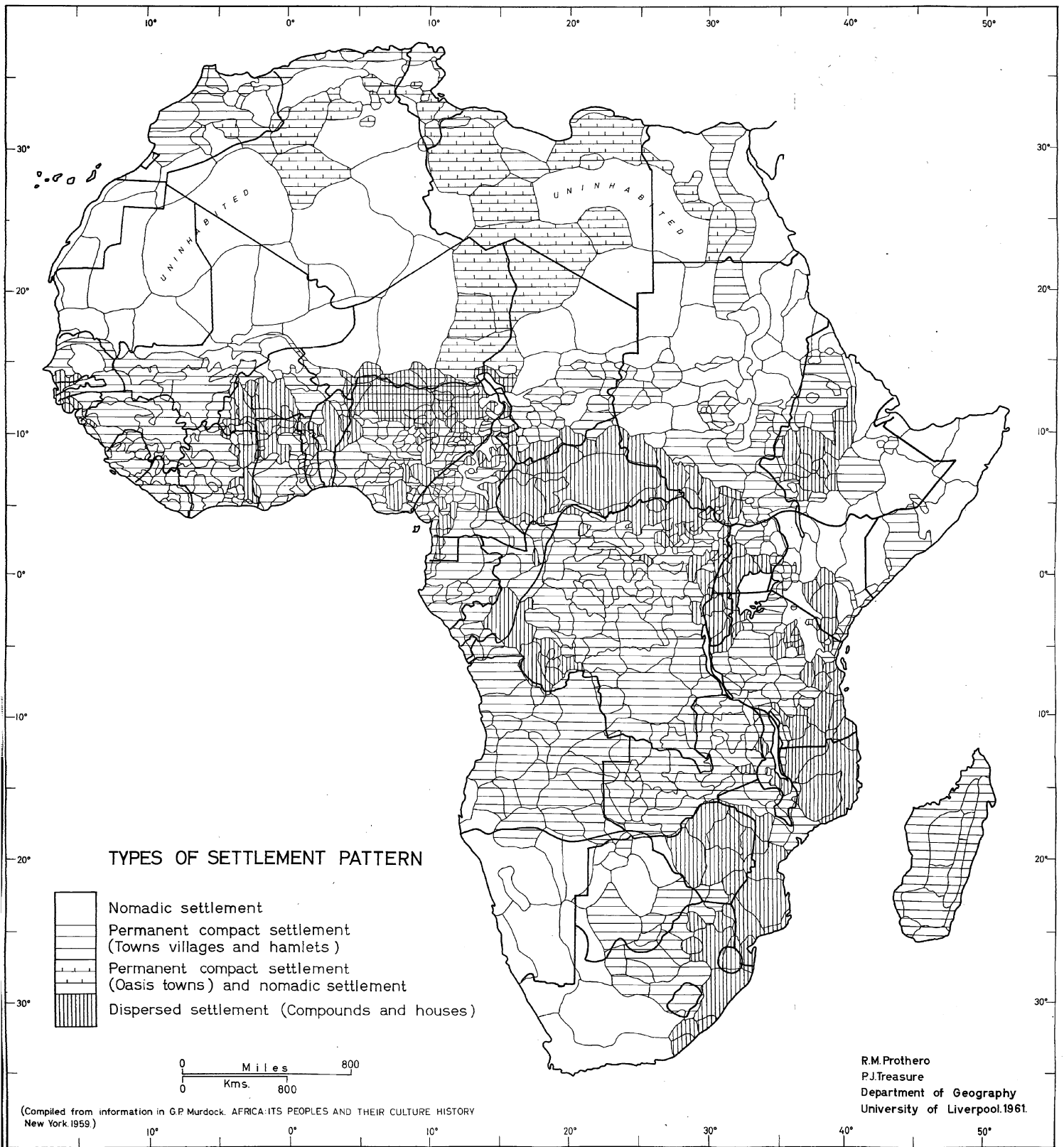
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| A3 AJUKRU | L5 LONGUDA |
| A4 ALAGYA | M1 MAMA |
| A5 ARUSHA | M2 MATAKAM |
| A6 AVATIME | M3 MATAMATA |
| B1 BAKURUR | M4 MANGODO, BAO, O (NE) |
| B2 BACHAMA | M5 MBEIBE |
| B3 BANGANDU | M6 MBUGU |
| B4 BANYUN | M7 MBUGWE |
| B5 BASARI | M8 MBULA |
| B6 BASILA | M9 MEKYIBO |
| B7 BIAPADA | N1 NATANA |
| B8 BONDEI | N2 NAUDESA |
| B9 BULISA | N3 NDORO |
| C1 CHAKOSSI | N4 NYANGIYA |
| D1 DERA | N5 NOBELE |
| D2 DURUMA | N6 NONGONO |
| E1 EGEDE | N7 NSUNGLI |
| G1 GALIM | P1 PODOKWO |
| H1 HARARI | S1 SONJO |
| I1 IHO | T1 TATOGA |
| I2 ITSEKIRI | T2 TEMEN |
| J1 JERAWA, CHAWAI (SW) | V1 VAGALA |
| K1 KAPSINI | W1 WAKURA |
| K2 KARABORO | W2 WARA |
| K3 KATLA | W3 WGBA |
| K4 KEBU | Y1 YERGUM |
| K5 KEREWI | Y2 YUNGUR |
| K6 KURAMA, GURE (NE) | Z1 ZUJANDE, BATU (E) |
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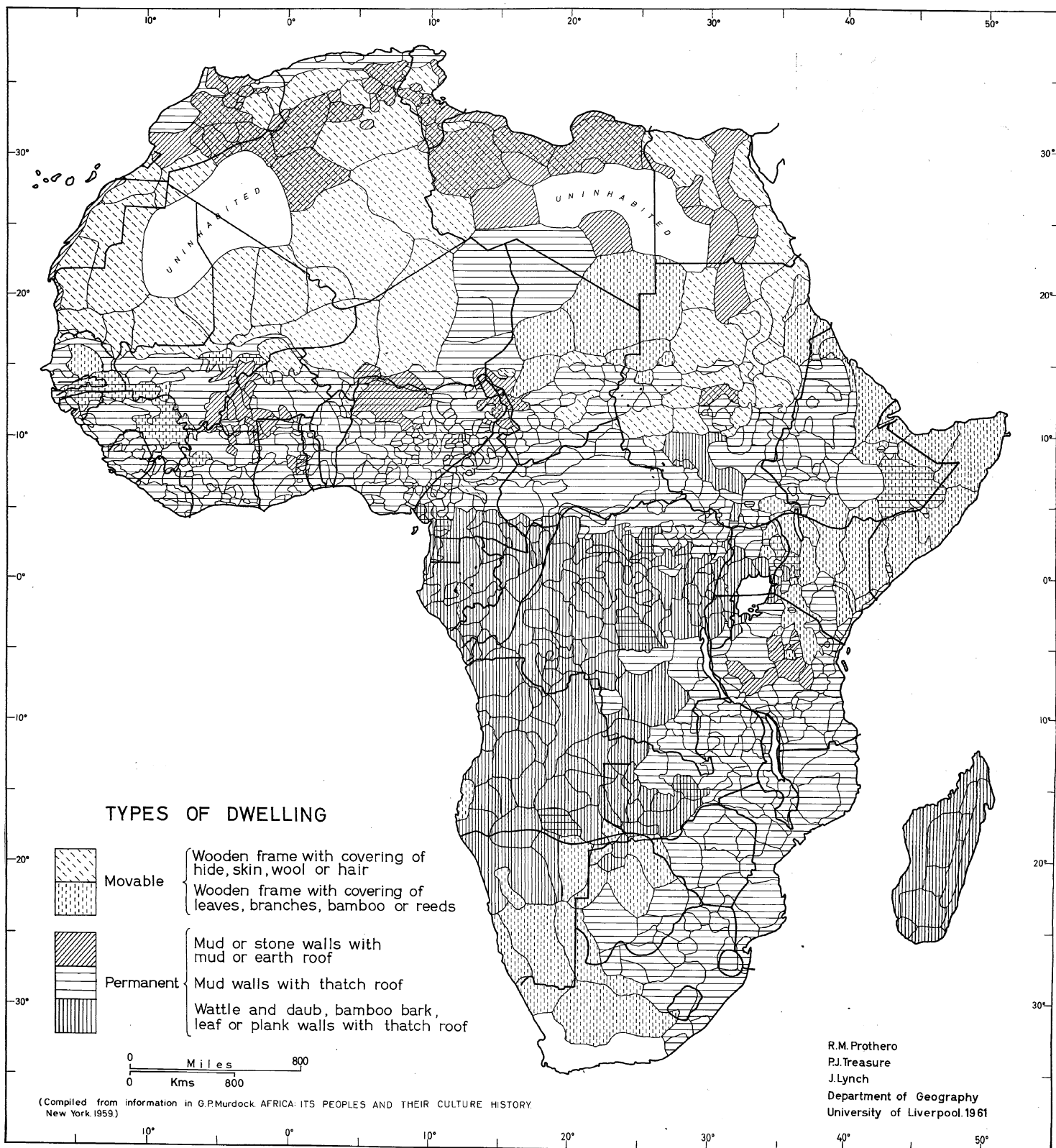
TRIBAL GROUPS

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




(After G.P. Murdock, AFRICA: ITS PEOPLES AND THEIR CULTURE HISTORY. New York, 1959)

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TYPES OF DWELLING

- | | | | |
|---|-----------|---|--|
|  | Movable | { | Wooden frame with covering of hide, skin, wool or hair |
|  | | | Wooden frame with covering of leaves, branches, bamboo or reeds |
|  | Permanent | { | Mud or stone walls with mud or earth roof |
|  | | | Mud walls with thatch roof |
|  | | | Wattle and daub, bamboo bark, leaf or plank walls with thatch roof |

0 Miles 800
0 Kms 800

(Compiled from information in G.P. Murdock, AFRICA: ITS PEOPLES AND THEIR CULTURE HISTORY, New York, 1959.)

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