

EAR, NOSE AND THROAT DISEASES
IN NIGERIA.

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behaves differently in one race than it does in another, it usually can be assumed that one or more differences in the characteristics of the races are responsible. It may be possible by careful study and comparison of these characteristics to isolate those that account for disease differences, thereby giving useful information concerning the etiology of disease. The characteristics that may differ amongst races are of two categories. There are those first that are biological - being anatomical, physiological, or chemical - of the type by which races are ordinarily distinguished. These are inherent and inheritable, and are probably the result of an adaption to an environment. Then, there are those that are environmental in origin and have to do with, among other things, the living conditions, the habits and effects reflecting the mentality of races. It is difficult to say which of these two types of racial difference is the more important or which one may account for the differences in effect of a given disease. One must determine first of all and in each case if the disease behaviour cannot be accounted for by the kind of houses people live in, or the kind of work they do, or the food they eat.

No organised treatise on racial pathology exists, in spite of its importance to at least two important biological sciences. The nearest approach to one is the well-known, but out-of-date, three-volume "Handbook of geographical and historical pathology" by

August Hirsch. But this is no more than it pretends to be - a medical geography which discussed the distribution of disease amongst the different countries. Since different countries include different races, the diseases of races are only incidently included. The same is true of the lesser works on medical geography. In the growing literature concerning "Konstitutions - lehre", which has to do with the relation of the body characteristics to disease, the question of race is involved, since the body characteristics vary among races. Most of the information concerning the distribution of disease among races appears in isolated papers and in medical textbooks as a small part of discussions on the etiology of disease.

Comparative racial pathology deserves not only to be the subject of a separate field of investigation and study, but also a separate name for its designation. It has been suggested that this subject be known as "Anthropathology", a word derived in the same way as was "paleopathology", and with the use of the roots that make up the word "anthropology". The term anthropathology is derived from the three Greek words "anthopos", "pathos" and "ologia", and means the science of the diseases of man. Its comparative meaning is the same as that which is understood in the body of the science of anthropology.

In Africa very little is known about many diseases among the bulk of the Negroes, and it is often

impossible to state whether or not some diseases even exist there, much less to give notes of incidence. In those parts of the continent under competent observation it often happens that interest is centered on diseases that are important in that country, but of no consequence in the more temperate climates.

Recently there has been a stimulation of interest in the medical and biological questions concerning the Negro. In 1927, Hodlicka published in the American Journal of Physical Anthropology, a list of two hundred and fifty titles, which comprised most of the accumulated literature on these subjects. In contrast, the Quarterly Cumulative Index Medicus alone cited in the single year of 1938, one hundred and six such titles.

The Negro is usually identified on the basis of ordinary anatomical characteristics, such as colour of the skin, shape of the nose and the lips, colour, texture and quality of the hair, and shape of the face and head. In addition to these there are other more or less specific but more subtle morphological features disclosed only by careful measurements, or concealed in the internal organs. The anatomy has for the most part been established by anthropologists in the study of the relations of the various representatives of mankind. Physicians are generally concerned with the bearing of anatomy upon disease, and they have attempted to explain with varying degrees of success, some of the peculiar manifestations of disease in the Negro on the basis of

his anatomy. For example, the prevalence of tuberculosis and pneumonia has been attributed to a small lung and an accompanying low vital capacity, the lack of resistance to certain infectious diseases to a small spleen, an immunity to other pathological conditions to a thick epidermis, or some peculiar property of the mesoderm, and the susceptibility to rickets to a dark pigmentation. Some of these correlations seem to exist in fact, but others appear to have no basis other than a last resort to explain phenomena for which there is no other explanation. The characteristic anatomical features of the Negro are not accidental, but are to be considered as an adaptation to a specific environment, a part of which are the diseases with which he has to cope. The efficiency of this adaptation is seen in the success with which he lives in those parts of Africa which are not readily inhabitable by white people. As a matter of fact, Negroes can live more readily in the countries of Caucasians than the latter can live in Africa, excepting those parts of the Continent with climates more or less European in nature. Although the mode of operation of each anatomical characteristic of the Negro as an adaptive mechanism is not always clear, it is so evident in some instances that it may be reasonable to assume that an explanation can be found in all cases.

In describing the anatomic features of the Negro it is imperative to recall that the people included under this name are not by any means a homo-

homogeneous group. In Africa there are at least four types of Negroes which differ from one another as much as any of them differ from many non-Negro races.

Exclusive of the two main non-Negro races of Northern Africa, the indigenous races of Africa are divided into the True Negro, the Bushman-Hottentot, the Bantu, and the Negrito (sometimes called Negrilla).

The delineation of Africans into groups has been made chiefly on the basis of ethnologic evidence, which is much more complete than the physical evidence, but the latter is complete enough to show that the four main groups have morphological features that readily distinguish them from one another, and from other races. The chief external features, as previously mentioned, on the basis of which races are described, are stature, head shape, quality of the hair, character of the face, including the nose, eyes, ears and mouth, and the colour of the skin. Racial differences of indices are often so small and variable that usefulness is questionable.

The home of the True Negro is in West Africa and extends from about the mouth of the Senegal river at 16° North, to the eastern border of Nigeria, and south to approximately the Equator. These people include among others, the Senegalese, Sudanese, inhabitants of Nigeria and Dahomey, and such well known tribes as the Ashanti, Mandingo, Kru and Mossi. The main features of the True Negro are his very woolly hair and black skin, tall stature, moderate dolichocephaly, a

flat nose, thick, often everted lips, and frequently a degree of prognathism.

Stockard (1) and Bean (2) are inclined to believe that the anatomy of the True Negro is due to their nearness to the sea-coast and the resulting large intake of iodine acting as a stimulant to the thyroid. On the other hand, the pygmies in the deep forests of Central Africa have a dearth of iodine. Walsh and Pool (3) state: "We have never been able to believe that the diseases of the two races as such differed in any essential detail. Many thousands of laboratory tests performed during the past eighteen years have produced similar results in the two races. Throughout the whole gamut of diagnostic research as represented by basal metabolic estimations, blood chemistry determinations, and other various techniques which are commonly employed, the normal findings have been identical. Differences found in the Negro as in the White, have been differences due to his age, sex, economic condition and other factors. We have never been able to find any true racial differences, nor have we been able to find in work of others similarly engaged, proof of any such differences."

(1) Stockard. (Am.J. of Anat. 31:261:1923)

(2) Bean. (Am.J. of Anat. 33:105:1924)

(3) Walsh & Pool. (Am.J. of Med.Sc. 196,11,253.1938)

People who live under primitive conditions are often credited with a higher development of the senses than scientific investigation justifies. To some extent this is true of the eyesight and hearing of the African native. It appears that as a result of a greater dependence for existence upon the senses, the sense organs are used with more directness and concentration, the reverse being true of certain types of senile deafness.

A greater acuity of vision, hearing and smell may be more psychological, more a result of a lesser sensory inhibition and to some extent, of habituation and concentration, than of some organic or anatomic development. It is more likely that the apparent better development of the senses amongst primitive people depends chiefly on the fullest use of the same quality of organs that other people possess.

Disease patterns do differ in many respects between Negro and white patients, particularly in the uneducated, uncivilised, native in Nigeria. White people reflect an attitude conditioned by a greater knowledge of the subject of human sickness. The Negro on the other hand lives at peace with his various organs (1) and his attitude to various forms of sickness seems to be one of disregard. Thus the disorders in whites are commonly functional; but organic disorder takes the place of functional disorder in the Negro and is often of an advanced variety.

(1) Am.J.Med.Sc. 1938, 196.II, 252-6.

COLONY AND PROTECTORATE OF NIGERIA. The Colony and Protectorate of Nigeria is the largest West African British possession and one of the largest of the non-self-governing Dependencies in the Empire. Its approximate area, including the area of the Cameroons under British Mandate being 372,674 square miles, or almost four times that of the United Kingdom and one and a half times that of France. It is bounded on the West and North by French territories, on the North-East by Lake Chad, on the East by the Cameroons, and on the South by the Gulf of Guinea. Approximately, the population numbers twenty millions and this is distributed as follows (1936):

Southern Provinces	7,793,355
Northern Provinces	12,013,767
British Mandate	417,245

The White population numbers only some five and a half thousand of which two thousand are officials. The Southern seaboard is 5° North and the Northern Sahara border is 14° North. Thus Nigeria offers a wide range of climatic and vegetation types, and an infinite variety of peoples, local customs and scenery, offering wide fields of study, as yet unexplored, for the specialist in every branch of science.

Climatic and vegetation types broadly are describable as a gradual transition from Near Saharan with rainfall of twenty-four inches or less, and a landscape of low, thorny scrub to high forest belt stretching across the lower Niger Delta, with rainfall of over a hundred inches a year, merging finally in the

narrow coastal belt of mangrove swamp and at times of rainfall of as much as an inch a day.

The people, too, are very broadly divided into several main tribal and linguistic groups. In the Northern Provinces, Hausa is the Lingua Franca of some three and a half million people, who with scattered Fullani have been long subjected to the levelling influence of Mohammedanism. The South-Western Provinces are mainly populated by the three million Yorubas whose highly organised society characterised by its large towns, contrasts strikingly with the small, thickly scattered villages of the equally numerous Ibos and Ibibios of the Central and South-Eastern Provinces. Within these groups are contained innumerable subdivisions, varying in their languages and their customs each with its special problems for administrator, medical officer and educationist.

In this vast area there are only five registration areas, including only 206,621, or 0.01% of the total population. Lagos, the principal town and capital, includes 160,717 of these. The birth rate is 23.7 and death rate 14.7 in these registration areas, that of Lagos itself being 23.8 and 13.8 respectively. Of the 3,040 deaths in Lagos in 1937, only 2,204 were certified, 89.6% by general practitioners. In Calabar only 38% of deaths were certified. The infant deaths were 683, and an infantile mortality rate resulted thus of 140 per thousand. The still-births are rarely made known.

In 1936 the non-native population totalled 6,823, of whom thirty-seven died in the country. Since then, this population has changed, many being called up or leaving the country (that is European wives though in 1942 many white females remained) and many soldiers entering the country. European officials resident in 1937 were 2,164, of these a hundred were invalided home, eleven died (three of blackwater fever, two of yellow fever). The numbers of the African officials are not available, but eighty-one were invalided out of the Service, and twenty-four died, (four of pneumonia, three of pulmonary tuberculosis, three of nephritis, five of intestinal ailments and two of cerebral malaria). Of the invalided African Negro officials, twenty-three were labelled optic atrophy and twelve respiratory affections.

School inspection carried out in Port Harcourt showed reasonable health amongst the children (Fig. I)

SCHOOL INSPECTION. PORT HARCOURT. (Medical and Sanitary Reports, Nigeria 1937.)		"A"	"B"
Development:			
Good to Very Good		70.0	69.1
Fair to Good		27.6	28.0
Poor		2.4	2.9
Skin affections (includes scalp)		19.4	24.6
Enlarged glands (mainly cervical)		49.4	44.4
Enlarged spleens		10.0	9.1
Throat defects (mainly tonsil defects)		46.2	24.1
"A" = Better class			
"B" = Average school			

(Fig.4)

OFFICERS		BRITISH OTHER RANKS
Malaria	19	77
Blackwater	4	19
Neuroses	16	36
Accidents	12	7
Digestive	12	8
Tuberculosis	2	9
Ear, Nose & Throat diseases	10	15

These ear, nose and throat cases could be divided into classes as follows:

(Fig.5)

OFFICERS		BRITISH OTHER RANKS
Chronic suppurative Otitis Media	1	9
Sinusitis	6	3
Deafness	2	2
Carcinoma of larynx	1	-
Carcinoma of pharynx	-	1

No deaths of ear, nose and throat diseases amongst either of these groups in Nigeria occurred. As a comparison, a table of similar type for India is included.

(Fig.6)(i)

ANNUAL REPORT OF PUBLIC HEALTH COMMISSIONER. INDIA. 1927. Vol.II, pp.ii & 217, 1929.		
Strength of troops:	Officers 2,476.	Men, 55,362
Malaria	168	7,723
Bronchitis	101	891
Infection of alveolar tissue (Bites chiefly)	99	1,755
Tonsillitis	99	1,632
Diarrhoea	95	922
Sandfly fever	81	1,429
Dysentery	48	877
Venereal disease	-	3,160

INVALIDING TO UNITED KINGDOM.	
Inflammation of middle ear	155 (This headed list in two previous reports. (Report states may be due to prevalence of Tonsillitis.)
Pulmonary tuberculosis	73
Mental diseases	67
Epilepsy	46
D.A.H.	40
Perforation of tympanic membrane	32
V.D.H.	32
Neurasthenia	27
Malaria	20
INDIAN ARMY INVALIDING.	
Pulmonary tuberculosis	343
Injuries	149
Diseases of Ear and Nose	136
Diseases of eye	101

Stitt (1) concludes that the deleterious effects of this type of climate are due to monotony, nostalgia, insufficient physical exercise, excessive indulgence in alcohol, and increasing number of certain types of infection, all of which are correctable. He states that there is no reason then for harm to come from prolonged residence, and this was also confirmed by the Board of Army Officers in the Phillipines, 1926, Stitt gives for example of this reasoning the fact that in Tropical Australia there are one hundred and three thousand white men and women with no native help. But Stitt does admit greater seriousness of staphylococcal infections and the tendency to pyaemia, of which we have had personal experience.

But the hot, moist atmosphere of the humid coast belt and the rainy areas in the wet period (Fig.7) which in a large part of the country lasts for six months, introduces elements which are difficult of

(1) STITT - (Tropical Diseases Textbook)

elimination without a great deal of expense, and at the present time impossible with the facilities available for the large numbers of men involved.

(Fig.7) TEMPERATURE.						
	Maximum in shade	Minimum in shade	Average maximum	Average Minimum	Relative humidity	Rainfall in inches (Average 1919-20-21)
IBADAN	102	53	90.3	66.3	87.7%	48.10
FORCA- DOS	98	50	84.5	71.6	79.8%	150.57
LAGOS	99.5	69	85.1	75	81.8%	60.39
MAIDU- GURI	116	52	98.8	69.3	46.1%	16.91

The most trying of all climatic conditions is that of a relative humidity which is high and associated high average temperature. This is found in Lagos and along the coast though it persists well into the hinterland, sometimes up to 100-200 miles to some degree, and further North in the rainy season.

High humidity with lack of ventilation beneath the mosquito net, the constant energising atmosphere, and the lack of energy and interest in their work, soon reduce the resistance of the troops. The result is a vicious circle in the worst psychological types, and certain men rapidly show the results of this in lack of necessary precautions, and hence malaria and other tropical and lowering illness further disable their capabilities of remaining healthy during the eighteen months of their enforced sojourn in the country.

During the dry season in the South and the greater part of the year in the North, other factors such as enteritis, lack of green stuffs, and the drying effect of the air and dust on the mucous membranes of the upper respiratory tract also have an ill effect on

the health of the troops. The civilian official or trader on the other hand is at an advantage in many ways, in that this is his chosen mode of livelihood and he is interested in the life and methods of keeping himself fitted for it. His family interests are in the country also, and he is raised by his status and isolation above the close communal existence of the barracks. These are some of the factors accounting for the remarkably higher morbidity of the British soldier in Nigeria as compared with the civilian.

DIET OF NEGRO. Reference is often made to the diet of the Negro in a discussion of his diseases. If the diseases are those which occur with relatively low frequency, such as dental caries and peptic ulcer, the diet is spoken of as plain but wholesome, and as a considerable contributory factor in preventing the diseases. If, on the other hand, the diseases discussed are of high frequency, such as rickets and tuberculosis, the diet is often considered as being of much influence since it is deemed highly inadequate both in quality and quantity. The divergence of these views about the Negro's diet indicate that it is not a fixed one, but varies greatly with groups and individuals as it does among other people. Despite the myth of pork chops and chicken, there is nothing racially specific about what coloured people eat. If there is anything common to their food, it is that it is a diet of a community. The likes and dislikes of people for certain foods are determined by habits created for the most part during

childhood and retained with tenacity during life. In Africa the diet of the natives depends on the cultural pattern of the various tribes, whether they are nomadic agricultural, or pastoral. It is, for the most part, uncontrolled, and both its quantity and its quality are subject to the vagaries of nature. (1).

Much attention has been given recently in the African literature to the inadequacy of the native diet to the nutritional diseases resulting therefrom. While food deficiencies occur in natives living in natural conditions, they have been augmented a great deal through the influence of European colonists, especially in labour camps, schools, asylums and prisons. In South Africa, for example, amongst the Bantus, one of the chief articles of diet was at one time the millet seed, but this was supplanted by maize, which was introduced by the Dutch (2). The latter cereal lacks certain essentials that millet has, and deficiency diseases have appeared if they were absent before, or increased if they were already present. Food consists in Nigeria mostly of the following articles :-

Group I: Cassava, yam, cocoa yam, maize, plantain, sweet potato, spinach (there are forty varieties with edible leaves) beans and peppers.

Group II: Bread, rice, bananas, tomatoes, oranges, sugar-cane, paw-paw, avocado pear, pine-apple, palm oil, ground nut oil, dried fish and meat, palm wine, soup (olive, garden egg, onion, pepper, snails and edible fungi)

(1) P. Hintze - Geographie und Geschichte der Ernährung. 1934.

(2) Corkhill - Lancet 1, 1387: 1934.

Group III: Meat, eggs, fresh fish, sugar, tinned milk and at times tinned butter.

Group I are the most common foods, Group II may be eaten once a day, and Group III about once a week by the average household, rarely or never by the poorer or more rustic ones, and more often by the wealthy and townspeople. Milk is only obtainable from tins. There is practically no cattle breeding except in the North because of tsetse and rinderpest. The goats are never milked.

In an article in the West African Medical Journal⁽¹⁾ on diet in Sierra Leone, it is noted that the staple food is rice and cassava with palm oil and dried fish, neither of the latter two substances even when included in a proportion up to ten per cent of the diet gives a satisfactory content of Vitamin A to the food. Chicken, egg and fresh dairy produce are luxuries and meat is lean and tough even when available. The fish is very badly dried and unwholesome.

Also, in Freetown gaol, Beri-Beri was rife, and tailors, fifteen per cent of the inmates, showed fifty-seven per cent of the actual cases diagnosed due to their sedentary and inactive occupation. Lack of exercise in fowls has been shown to produce an earlier onset of signs of Vitamin B shortage.⁽²⁾

In Nigeria⁽³⁾ it has been found that the poorer school children and the labourers show avitaminosis, and examples are described of geographic

(1) W.A.M.J., 1928 - 2 - p.127.

(2) W.A.M.J., App.12, 1923.

(3) Medical & Sanitary Reports of Nigeria, 1938.

tongue, perleche, phrynoderma, and in advanced cases retrobulbar neuritis. The actual food deficiencies in the South were proteins, and in the Northern provinces proteins and greenstuffs.

Hospital returns showed admissions for the various avitaminoses to be as follows:

(Fig.8)

HOSPITAL RETURNS: 1933.

Beri-Beri	26
Rickets	79
Scurvy	33
Pallagra	25
General hypovitaminosis	441

Other writers find more general deficiencies in proteins, mineral salts and fats, and thus a notable malnutrition, though the diet may be fairly full and rich in carbohydrates. (1)

Night blindness in institutions in Tanganyika is reported as cured by the use of a vitaminised palm oil. (2), (3), (4). This was also used in West Africa amongst the native troops who were shown to have a low vitamin A intake on the normal Army diet. Irradiated palm oil proved a satisfactory method of administration again.

(1) Lancet, Jan. 8, 1938 - 97.

(2) Trans. Roy. Soc. Trop. Med. & Hyg. 34, 231, 1940. (Moore, D.F.)

(3) Williams, C.D., Trans. Roy. Soc. Trop. Med. & Hyg. 34, 85, 1940.

(4) Raymond, L.D., Trans. Roy. Soc. Trop. Med. & Hyg. 3, 35, 1941.

Deane (1) and also Fletcher (2) notes gross states of avitaminosis in dispensary patients, chiefly Negroes living under conditions similar to those in West Africa. Earle (3) also describes avitaminosis discovered in the routine medical examination of apparently healthy men in Trinidad. He mentions deficiencies involving most of the vitamins.

Further references to dietetic variations and insufficiencies will be introduced into later discussions on specific defects, but it is the less discernible, what may be termed 'States of low vitality', types of deficiency, induced by long standing sub-nutrition which are here important. Such conditions undetectable still by routine chemical or laboratory methods do not appear as distinct entities, nor can they be ascribed to defects in any particular food elements. Rather are they states of general under-nutrition, the lack involving in varying degree any or all elements except perhaps carbohydrates.

CHILD LIFE AND HEALTH. The first months of an infant's life are certainly the happiest. It is carried about on its mother's back, a position it loves, it sleeps close beside her, it is nourished when it cries, and on the whole it does remarkably

(1) Deane, C.G., Carribbean Med.J. 1, 34.

(2) Fletcher, A.G.M., Report of Commission, Trinidad and Tobago Disturbances, 1937.

(3) Earle, K.V., B.M.J., 21, ii, 42.

well on this treatment. Apart from the considerable proportion of neonatal deaths, some thirty per cent are chubby, cheerful, and bronchitic. An equal number are normal up to nine months, and perhaps only forty per cent show signs of mismanagement.⁽¹⁾ After the earlier months the mother is recalled to her duties of house and farm work and the child tends to show the results of neglect. The mothers are still fond of their children but are incredibly careless with them; like all the primitive peoples they lack imagination. The baby may be left to a small girl who drops him or leaves near a fire where it may be long before his cries draw attention to considerable burns. As soon as he becomes mobile he is allowed to crawl all over the compound. He stuffs his mouth with all sorts of rubbish and dirt. When one considers that the compound is full of other children and animals with equally insanitary habits - not to mention the expectorating adults - the results can be imagined. It is no wonder that the average child of eighteen months weighs no more than he did at nine months, that he is pot-bellied and spindle-legged, peevish, helminthic, and in constant abdominal discomfort. The idea that the 'savage' has an instinctive knowledge of the care of her children is not founded on facts learned in Nigeria.

(1) Williams, Lancet, Jan.8, 1938, p.99.

Malnutrition is again the most serious problem in children, and again the diet is chiefly bulky carbohydrates, oddments of food given at all times of the day, and protein and animal fats are lacking. Also mineral deficiencies may prove to be considerable, though the orthodox deficiency diseases may be rare. Improved nutrition will do more to raise the standard of health and of living conditions than any amount of medication, sanitation, and hospitalisation. The 'survival of the fittest' has become clumsy and obsolete, having practical value only as long as man has purely animal ambitions. The fact that a child survives an attack of pneumonia at three years old does not mean that he is more fit to survive another attack, nor to become a lawyer or labourer. Conditions that kill the weakling are also conditions that make weaklings of the strong. The weakling child if assisted over preliminary difficulties may grow up to be just as robust as the child who flourished consistently. Nature uncontrolled is no more fit than an earthquake in eliminating the unfit. It would seem more desirable to try to ensure that those who survive shall be fit.

RESPONSE TO DRUGS IN THE NEGRO. Medical writers of slavery days apparently were under the impression that Negroes responded in a manner different from white people to therapeutic drugs. To this end an almost complete and special pharmacopoeia was utilised for the treatment of diseases amongst slaves. This

was probably due to a genuine feeling that Negroes were a species distinct from whites, but also due to the fact that many unfamiliar diseases were imported from Africa with the slaves. Modern medicine with its more accurate methods of observation recognises very few differences in the action of drugs on Negroes and whites. Paskind (1) says atropine produces similar acceleration but that the initial depression is greater in whites. Thus Negroes are less susceptible to the central action of atropine. Chem & Path, (2) say Negroes are less susceptible than whites to cocaine and ephedrine. Niles (3) says that Negroes require fifty per cent more cathartic but less sedative and hypnotic drugs to produce equal effects with whites.

Agranulocytosis (q.v.) is rare in sulphonamide therapy in the Negro and in many cases of pneumonia (a very common disease in natives), Hutton (4) saw none in spite of treatment with sulphapyridine and sulphanilamide.

Haemolytic anaemia is said to be more common in the Negro after sulphanilamide. (5) Neither of these conditions was observed by us in a fairly wide hospital experience, both civil and military, in Nigeria.

(1) Paskind. J. Lab. & Clin. Med. 7;104:1921

(2) J. Pharm. & Exper. Therap. 36:429:1929.

(3) Niles. South. M. J. - 6: 129: 1913. & J. Florida M. A. 5:118:1919.

(4) Hutton. E. African Med. J. 16:74, 1939.

(5) J. A. M. A., 109:12, 1937.; J. A. M. A. 111, 1916, 1938. Ohio S. M. J., 35:1204, 1939; J. A. M. A. 12:1021, 1939. Yale J. Biol. Med, 10:275, 1938.

Not many comparisons of the Negro and the white relative to diseases of the ear, nose and throat have been made, and most of those available were published many years ago. In 1894, Dunbar (1) published data comparing nose and throat disease in the two races similar to, though not so fully, as did A.M.Scheppegrell (2) one year later. The latter collected 11,855 cases from New Orleans whose population in 1890 numbered 177,376 whites and 64,663 Negroes. But as the coloured people were more often patrons of the free clinics he thought the numbers of cases attending would be equalised. (Fig. 10) He found nine times more post-nasal catarrh in the white patients. Chronic suppurative and non-suppurative otitis media were sixteen per cent and twenty-six per cent only of those of the whites. The secret, he felt, lay in the small number of nasal infections, for only a fifth of the nasal congestive and hypertrophic conditions occurred in Negro patients. Roy (3) noted that the cases of marked septal deviation in the nose of the Negro were rare. This may be accounted for by the fact of a lower palatal arch and of wide nostrils and flat broad nasal outline. According to Thompson and Buxton (4) for the old world, the average climatic

(1) Dunbar. Virginia Med. Semi-Monthly. 21-176-1894.

(2) Scheppegrell. A.M., Am. Ophth. & Otol. 4:589:1895.

(3) Roy, Laryngoscope: 27:679: 1917.

(4) Thompson & Buxton, J. Roy. Anthropol. Inst. Vol. 53: 92: 1923.

conditions correlate with the nasal index to the extent of a correlation co-efficient of 0.721 where one is the perfect correlation. Had population movement been extensive enough within two thousand years to mix up the races, then it might have been said that climate will wipe out racial persistence, and so impair a valuable criterion of race. But the actual movement of the populations they investigated in Africa, India, and South East Asia was small. Thus, no information can be available until time taken for nasal index to become adjusted to climate is known.

Shrinkage due to cold can only go to certain limits as lungs must have enough air.⁽¹⁾ Thus beyond this limit the other organs such as the hair and skin must change, and artificial aids may be brought into play, and fur over the face may be of considerable help. Once the aperture is narrowed to the limit, further adjustment to climate may result in the lengthening of the nose and the development of an unusual shape. Davies finds seventeen tribes have been away from their original homes for 4,000 to 5,000 years, but the narrowing of the nose has not shown very markedly, the reverse may occur more definitely, in fact it may be appreciated, he thinks in 2,000 years (one unit of change each 500 years). Narrowing of the nose occurs only with other structural alterations of the skull.

(1) Davies, Man, 1929 (4), 29 (1) 8.

Three forms of human nose occur (1). These are:

Hypo-phylo-morph - an underdeveloped, infantile, broad, short, nose; occurring in Negritos, Malays and Pygmies.

Meso-phylo-morph - a massive, long and broad nose, with the nostrils looking partly forwards. This is seen in true Negroes.

Hyper-phylo-morph - a long, high and narrow nose, with little flare of the nostrils. The Jewish nose is an exaggerated form of this type.

Other factors may have an influence on the shape of the nose, the social position of the Jews is said to have the effect of pulling down the nose by the action of the muscles of expression. Increased vascularity of the nasal mucosa and erectile tissue, as in excessive sexual indulgence, may alter the shape, according to some authorities, and this is accepted in Folk Lore. (2).

The nose is affected in varying ways by the different tropical climatic conditions which may be found in Nigeria. Everywhere the heat and light are increased as compared with the normal expected in England and Scotland.

In his Textbook of Physiology, Starling places the causes of increased nasal ventilation under the following headings: skin cooling, short-wave radiation, adrenaline increase in the blood. The first two may be associated with reflex action from the skin.

(1) Anat.Rec. 7:43.1913

(2) Rolleston. J. Laryng.& Otol. 58: (12):
272, 1943.

The causes of decreased airway may be classified

also:

Histamine increase in blood
Heating of skin) Hence effect of
Infra red irradiation) stuffy rooms in
Winter.

(Fig.9)

AVERAGE CROSS SECTION IN M.M. OF NASAL PASSAGES AT (1) 40 c.m. WATER PRESSURE.			
Initial Cross section	Electric Fire	Histamine 1:1,000	Adrenaline 1:1,000
20.8	16.8	10.2	25.1

This application of cold to the skin results in peripheral vaso-constriction including the vessels of the nasal mucous-membrane, and allows increase in organisms already present in the nasal cavity. Thus again nasal and skin vessels react in much the same way to temperature, and dilatation of nasal vessels with the heat and light of the tropics is almost constant, and hence nasal obstruction is apt to occur. This dilatation appears to be unaffected by the already warmed air as the function of temperature regulation of the air entering the lungs would appear to be of secondary importance. A good deal of discussion as to the possibility of nose opening and nose closing rays appears to have occurred prior to 1933 associated with certain statements by Hill (2) and it seems finally to have been established by experiment that bright light, convection, conduction, and infra red irradiation of heat will all produce nasal vaso-dilatation and closure of the nose.

(1) Van Dishoeck. J.Hyg. 1935 - 35: 185.

(2) Hill, J.Hyg. 33:4:476:1933.
J.Exp.Med. 34:11:1921.

The more primitive nose of the Negro thus fulfills the functions necessary to the nose in the moist, tropical conditions of the West African coastal and semi-coastal belts, but as the country becomes dryer and more dusty, the dilated nostril and the wide airway gives place to the narrower nose of the Arab in whom filtering and moistening are more necessary and more adequate to the conditions in which he lives. The nose of the Negro is ill-adapted to the desert conditions of the Northern Provinces and results of this are seen in an increase of nasal pathology as compared with the very scanty pathology of the native living by the sea.

The European nose is adapted less to the Southern than to the Northern extremes. In the South one is struck by the large number of cases who complain of stuffiness of the nose, and who, on examination show marked dilatation of nasal mucosal vessels and hypertrophic, spongy, lax, turbinate tissue. Other factors may come into play to help produce a defective airway besides those which have been discussed. The lack of use of the nasal functions of warming and moistening the air may allow laxity, and the high average temperature with warm nights never produces sufficient cold stimulation of the skin to contract the mucosal vessels. Also other mucosal surfaces may be affected, Waidell⁽¹⁾ describes the marked effect of Nigeria in hastening the gum recession and ascribes the condition to lack of calcium

(1) Waidell. B.Dental J. 1943.

and to increased infection. Proof of calcium deficiency is said to be shown by lack of density of bones on x-rays as compared with cases in Britain, by the prolonged healing of fractures (described in Military Surgical Reports issued to Troops in West Africa, 1941), by statistics of blood calcium, and by defective calcium content of diet. Milk is difficult to obtain as none is produced locally, and the water is less rich in calcium than is usual, in many regions at home.

Stitt, in his Textbook of Tropical Diseases, says there is a notable difference between tropical and non-tropical dental affections. There is an increased spirachtaetosis of the mouth, a greater virulence and extent of infection, delayed response to ordinary medication, increased susceptibility to post-operative infections, and failure to retain pulpless teeth as useful units of the dental arch.

As regards blood calcium, Kelly and Henderson (1) found that forty-two East African subjects on prison diet showing calcium deficiency, had a blood calcium of 9.2 mgms. per cent. Labourers in the same area had access to markets and their blood calcium was 9.5 mgms. per cent average. Hamell (2) estimated the blood calcium in forty-four healthy Negroes and found it to be 10.93 mgms. per cent which is 0.430 above the European normal of 10.5 mgms. per cent.

(1) Kelly & Henderson - J.Hyg. 29:418-429-1930.

(2) Hamell - Am.Rev. Tuberc. 19:350:1929.

In Nigeria estimations vary, McCulloch (1) records low figures, but M. Ellis (2) in investigating the etiology of tropical ulcers, found the blood calcium between 9 and 11 mgms. per cent in thirty-one out of fifty-one patients, and above this in thirteen others, all with ulcers. He states that though most foodstuffs in West Africa are deficient in calcium, rickets ~~is~~ still rare.

The available ultra-violet rays in Nigerian Southern areas are low throughout the year owing to atmospheric absorption. Hughes (5) in investigations of Indian and European subjects found that blood calcium in the Punjab was higher in normal healthy individuals than in temperate climates where normal is between 10 and 11 mgms. per cent. (Indians 12.51 mgms. per cent - Europeans 11.74 mgms. per cent.) On the other hand, Henderson and Kelly (3) found that in Kenya the average serum calcium of ninety natives with no obvious disease was 9.2 mgms. per cent. They also state that the general figure for natives is somewhat low and that there are many sub-normal cases (7.3 mgms. per cent.) (4)

Parwan (6) notices that in Trinidad, though the diet is deficient in calcium, nevertheless the serum calcium average is 10.15 mgms. per cent or higher.

(1) McCulloch - Med. & San. Rpts. of Nigeria for 1932. Appx. D.

(2) Ellis, M., - Trans. Roy. Soc. Trop. Med & Hyg. 30:383:1936

(3) Henderson & Kelly - J. Hygiene, 29:418:1930

(4) J. Hygiene, 29, 439:1930.

(5) Hughes, T.A. Indian J. Med. Res. 17:461:1927.

(6) Pawan, J.L. & Camps-Campino, J. - Ann. Trop. Med. 35:1:193

There is a decrease in cases debilitated and with ulcers, but with good health and yet ulcers the cases show serum calcium above normal.

Calcium is one of the most important of the constituents of a supplementary dietary mixture, and a rise in serum calcium will result from this. But serum calcium may not reflect dietetic insufficiency. (Kelly & Henderson)(1)

Nichols⁽²⁾ ~~comments on the calcium deficiencies in the Tropics.~~ Thus we notice a hypertrophic rhinitis of frequent occurrence in European subjects in Nigeria, of doubtful etiology, probably related primarily to lack of function, and excessively bright sunlight and heat, and perhaps secondarily to infection, dietetic imbalance, notably defective calcium, and other factors such as hormonal changes (cf. Tropical aphrodisiac tendency) and psychic disturbances. These factors were associated to produce an increase in nasal pathology in the European Troops, though little was seen in the native soldiers of note in the nose, the more highly civilised civilian Negro on the other hand showed similar hypertrophic rhinitis though less frequently. The condition is similar to one described as chronic obstructive rhinitis by Thacker⁽³⁾ and as chronic vaso-motor rhinitis by S.L. Fox⁽⁴⁾ who describes a similar

(1) Kelly & Henderson - J.Hyg. 29, 439, 1930.

(2) Nichols - 'Tropical Nutrition and Dietetics',
Balliere, London.

(3) Thacker, -E.A., - Annals. Otol. 49, 4, 939, 1940.

(4) Fox, S.L. - Laryngoscope, Dec.1943.

~~sought for~~. Certain of the less marked cases responded moderately to a physiological solution of ephedrine ($\frac{1}{2}$ per cent) in normal saline applied in the supine and lateral positions, so as to reach the nasal roof and remain there for ten minutes on each occasion of the dozen or so recommended. (1) & (2)

Certain of the sclerosing agents described for the therapy of varicose veins and to be injected sub-mucously into the turbinate tissue seemed likely to meet the therapeutic requirements. Quinine urethane had previously been described as satisfactory in certain types of cases of this kind and was accordingly injected in doses of 0.25 - 1 cc. (3) & (4) This was found to be unsatisfactory chiefly on account of the marked discomfiture of the patient in several cases, severe headache being produced with nausea and syncope.

Sodium morrhuate was used by Thacker (5) in the treatment of chronic obstructive rhinitis. He specified that the condition should be chronic, non-specific, and non-allergic, and which shrinks well with astringents, to react satisfactorily. Cases which are not responsive to vaso-constrictors are not amenable to this treatment. The final result is a diffuse fibrosis

(1) J. Am. Pharm. Ass. 30, 191, 1941.

(2) Arch. Otol-Laryng. 8-27, 1928.

(3) Richier, J, Soc. de Laryng. des Hôp. de Paris. Feb. 1930.

(4) Bol. Assoc. Med. de Puerto Rico: 25:544:1933.

(5) Thacker, E. A. - Ann. Oto-Rhino-Laryng. 49:4:939:1940
Arch. Otolaryng. 33:600, 1941.

throughout the tunica propria, and lessening of the mucous in the lumen of the glands though no change occurs in the numbers of the latter. The vascular sinuses of the turbinates are reduced in size and number, and he observes no evidence of atrophy even after eighteen months.⁽¹⁾ Similar injections have been used by others in the treatment of hay fever, vaso-motor rhinitis, and chronic rhinitis, with excellent results.⁽²⁾ Straus⁽³⁾ injects sclerosing agents into the soft palate to prevent snoring. Other sclerosing agents which either did not appeal to us or were unavailable were carbolic acid⁽⁴⁾, quinine lactate⁽⁵⁾ sodium psylliate (sydnasol),⁽⁶⁾ glycerine⁽⁷⁾ and sodium salicylate⁽⁸⁾ Sodium morrhuate was tried in several cases and produced less marked systemic reactions than quinine urethane, and from that point of view was satisfactory. Both of these drugs produced ulceration of the mucous membrane of the turbinates in several cases, in a few to such an extent that thick adhesions to the septum developed which were difficult to remove, making the final state of obstruction little less than at the origin of the treatment.

(1) Arch.Otolaryng. 36:336:1942, and 36:632:1942.

(2) Bull, Pract.Ophth. 13:1:15-1943.

(3) Straus. Arch.Otolaryng. 38:3:225, 1943.

(4) Hutchinson, C.A., B.M.J. 1:72:Jan.1937.

(5) Monson, L.P., Arch.Otolaryng. 22:96, 1938.

(6) Fox, J.F., Laryngoscope, Dec.1942.

(7) Med.Ibera. 1:517:1934

(8) Zhur.Ush., Nos i gorl.Bolez. 15:601-1938.

Thus it appeared that a milder or less toxic agent of more physiological type was needed to reduce a hypertrophic condition of short standing (as was present in most of these cases), and which showed a marked and rapid reaction to the mildest vaso-constrictor. It had been noted that concentrated glucose solution produced thrombosis of the veins of the arm in many cases in which it was introduced in an attempt to reduce cerebral oedema.

Injections into the nasal turbinates may be exceedingly dangerous as they are not static large channels which may be expected in large varicose veins. Schught⁽¹⁾ describes the use of the turbinates as a pathway for injecting solutions intravenously. Polte⁽²⁾ first used the method for arsphenamine in the treatment of syphilis. Six⁽³⁾ used a similar method in twenty patients. Schught has used up to 20 ccs. of calcium gluconate in the treatment of each of fifty patients with allergic rhinitis. He describes a sensation of heat in the body and takes this as an indication of direct injection into the circulation. Thus, the injection of any injurious substance directly into the circulation is not likely to be innocuous and no doubt accounts for the unpleasant symptoms associated with the use of quinine urethane in certain of our own cases noted above. The use of 50 per cent solution of

(1) Schught. Arch.Otolaryng. 32:1108-1109:1940.

(2) Polte. Ztschr.f.Hals.Nasen.u.Bhrenh.2:281:1922.

(3) Six. Beit.z.Anat.Physiol., Path.u.Therap.d. bhres. 23:93, 1926.

dextrose would seem to be almost innocuous if injected in small quantities, also it is easily available, and has a milder effect such as is required in the cases we were called on to treat. References to its previous use make no suggestion as to any deleterious systemic effects. (1), (2),

Twenty-six cases of Europeans and two of Negroes were treated and all showed some recession of the hypertrophy and lessening of the obstruction. Seven cases were satisfactory with one treatment, five needed three or more injections. No cases of ulceration of the nasal mucosa occurred, and no cases showed other deleterious symptoms as described above under quinine urethane treatment. A number of the more severe cases were associated with structural deformity and during the correction of this (usually by sub-mucous resection of the cartilage) the turbinate tissue was trimmed, as it was unlikely that injection alone would be sufficient to alleviate the symptoms. The fibrosis resulting from injections of glucose was not severe and thus when patients returned to Great Britain and the nasal mucosa tended to return to its normal state, there would be less tendency to atrophy. The cases treated more radically by surgery were those which would doubtless have continued to have symptoms of obstruction wherever they went.

(1) Monatschr.f.Ohrenh. 73:108:1939.

(2) Ibanez, N.M.G. - Bol.Assoc.Med.de Puerto Rico. 25:96:1933.

The solution is injected from a long steel needle of fine calibre (Pitkin spinal puncture needle). Decicaine (pontocaine) is said to be more satisfactory for local anaesthesia as there is no vaso-constriction- but in our opinion the anaesthesia is much less satisfactory and some vaso-constriction is helpful in aiding one to direct the needle along the turbinate. If the organ is not shrunk down the needle is seen to enter the anterior end, but thereafter it is impossible to see if it is passing beneath or superficial to the mucosa. Subperichondral^{INJECTION} is difficult and not necessary in our experience. After anaesthetization is achieved the floor of the nose and thereby the throat is protected by a double layer of half-inch gauze along the inferior meatus, as with certain of these solutions damage to the cilia is lasting if the solution comes into contact with the mucosa, and also should some of them reach the naso-pharynx considerable added discomfort may occur. Three inches of gauze may be left out of the nose, hanging down, to be used for packing into the vestibule to control the sharp haemorrhage occurring on withdrawal of the instrument. The needle is passed back sub-mucously under direct vision - that is care is taken to avoid further puncture of the mucosa and hence leakage of the solution, if possible it should go on two inches or so, but very often the distance may only be half an inch on first injection - this is at times enough to cause contraction of the whole turbinate, and, if

"sometimes there are twelve degrees of difference between the wet and dry thermometers; there is no dew." The climate in the far North is very different from that producing the symptoms of hypertrophic rhinitis just described. The drying effect of the air produces marked crusting, and when these crusts are removed damage results to the mucosa, epistaxis, nasal obstruction and exacerbations of sinusitis are complained of. These symptoms are produced more easily should the patient leave the South soon after intra-nasal surgery has been performed, and before the healing and regeneration of the cilia is complete. At first considerable difficulty was met with the return to hospital of cases after apparently successful surgery, who had returned or been posted North too quickly. Thereafter the difficulty was met by advising military and civilian departments to find occupation for these cases in the South for sometime after operation. Actual acute coryza and acute rhinitis are less frequent and severe in Nigeria. The Negro rarely complains of acute nasal symptoms. During the early months of existence on the coast few, if any, 'colds' are complained of by Europeans, later as resistance falls, occasional cases of acute sinusitis occur, but most of these resolve with conservative treatment, at least in the moister regions. The temperature rarely falls below 55°F. at night and, as has been stated, the nasal mucosa is not stimulated to contraction or relative avascularity with resultant

proliferation of the coryza-producing organisms. Atrophy of the nasal structures does appear to occur in the white races after prolonged exposure to conditions in Nigeria. We found first of all a marked hypertrophy and laxity of the mucosa and finally a condition suggestive of disuse atrophy. This condition has already been mentioned above and is a definite shrinkage of the structures and pitting of the turbinate tissues. No cases of atrophy were seen in Negro patients though often the turbinates were very small and the airway very large indeed. In this type of nose, infection of more than passing variety is rarely encountered, as any obstruction to drainage would be difficult to produce unless some condition such as one of the granulomata were a primary infection.

Roy⁽¹⁾ examined five thousand Negroes in twenty-two different Colonies and found that the African Negro was not subject to atrophic rhinitis and ozena, as was also the Negro of America, but he quotes Chardinal and Jones in stating that in Brazil the Negro, though less subject to it, may be found to have the disease in spite of great resistance to it.

Epistaxis. Only six patients reported epistaxis and most of these had had the symptom at home in Great Britain. Thus it seemed to us that the heat and tropical conditions do not predispose to gross nasal bleeding. Cauterization in each case was

(1) Roy, J.N., Laryngoscope. 27:679:1917.

successful in producing a cure with only one application. There was no case of excessive haemorrhage in any of fifty-seven operations performed on the nose, though the average bleeding was rather worse in the white than one would have anticipated at home, both during and after operation. St.Clair Thompson⁽¹⁾ states that extremes of heat and cold will constitute a cause for epistaxis, no doubt the extreme heat does not occur in West Africa.

Haemophilia. It appears that haemophilia is an extremely rare disease in Negroes. Bullock and Fildes⁽²⁾ collected all but six of ^{THE} known papers on haemophilia in the world up to 1911. They found but three papers reporting cases in Negroes among the total of over nine hundred cases. Since then only one additional case has been reported, making altogether four instances.^{(3), (4), (5), (6)}. Some of these cases are questionable also as having only one small and rather easily controlled haemorrhage. In fact Crandall in 1936 claimed his to be the only case described in a pure Negro. Packman⁽⁷⁾ and Campbell⁽⁸⁾ describe cases of coloured families with haemophilia.

(1) St.Clair Thompson. Textbook on Diseases of Nose and Throat.

(2) Bullock & Fildes, Treasury of human inheritance. Eugenics Lab. Memoirs. XII, Parts V & VI, Sec. XIVa, London, 1911.

(3) Trans. Acad. Med. 7:241:1874.

(4) Bull, Johns Hopkins Hosp. 11:44:1900.

(5) Med. Rec. 58:149:1900 (Two cases)

(6) Crandall. Am. J. Med. Sc. 192:745, 1936.

(7) Packman, J. Pediate, 10:809:1937.

(8) Campbell, Med. Ann. District of Columbia, 8:294:1939.

Fractures of the Nose are rare in the native as the Negro nose does not predispose to fracture. Fracture of the orbital plate and anterior wall of the maxilla was treated by Caldwell Luc approach for packing after elevation, and though the pack remained in position six days no notable infection occurred. The two cases of haematoma of the septum in Europeans were treated by aspiration followed by a small incision and insertion of a rubber drain shaped in the form of an arrow-head to retain it in position for two days. A similar number in Africans responded to this treatment.

Nasal Septum. In some four-five hundred cases of normal Africans examined in Nigeria, adults and children, I was struck by the absence of notable nasal deformity. Not one single case showed deflection of the septum sufficient to cause obstruction to the airway, though of course as the Negro nose is so broad this would have had to be a considerable deviation, but only two showed stages of deflection beyond slight deviations from the midline.

From an examination of four hundred skulls Potiquet⁽¹⁾ says that the facial angle is more and more inflected in ascending series from the anthropoid ape to the European, and similarly there is more deflection of the nasal septum. Thus the infrequency of the condition in the Negro is partially accounted for by the lower state of cranial development, and partially, according to certain

(1) Potiquet. Medicine Moderne, Vol. III, p. 153. Paris 1892.

authors, owing to the purity of the race, in which the faces are as similar in their regularity as their septa. This argument has an exception in that the Hebrew, a pure race, has a marked tendency to septal deviation. Delavan⁽¹⁾ shows that the aquiline nose of the Slav, the Hebrew and the ancient Roman, is particularly susceptible to deflections. Spiess⁽²⁾ found in ninety-two non-European skulls, sixty-eight symmetrical and only twenty-four un-symmetrical skulls. Roe (quoted by St. Clair Thompson in 'Diseases of the Nose and Throat') states that among Africans, deviations of the septum are found in about twenty per cent of individuals. Mackenzie⁽⁴⁾ in 2,152 skulls in the Museum of the Royal College of Surgeons, and Zuckerkandl⁽⁵⁾ in 263 European skulls, found 75 per cent showing deformity of the nasal septum. Hirsch⁽³⁾ says that it is far more common amongst civilised peoples to find some deformity of the septum than to meet one that is absolutely straight in the midline.

The increase in congestion and the development of hypertrophic rhinitis lead more troops to seek advice than it would have done at home, and the resulting larger numbers of sub-mucous resections of the septum were performed.

(1) Delavan. Am.Laryngol.Assoc. IX, 1888, p.202.

(2) Spiess. Arch. of Laryng. 1, 1894.

(3) Hirsch. Acta.Oto-Laryngol.9, fasc.1-2,p.86.

(4) Mackenzie, M. Diseases of Nose & Throat. Vol.II - 433:1884.

(5) Zuckerkandl. Normal Anatomy & Path. of Nasal Fossae.
Paris 1895.

The response to local anaesthesia was excellent, the method in general use finally after a trial of different methods, demanding less of the patient and less skill from the administrator, was a solution of three per cent cocaine with a little adrenaline added. The solution was used with the head hanging backwards and sideways, with the patient lying down. Haemostasis, which was slightly more difficult to obtain in the Tropics, was excellent by this method, and the swabbing away of the blood was seldom necessary. Crusting and adhesions after operation were not marked, and the general comfort of the patient after operation was notably good. Post-operative packing was never used. When first seen, their complaints of malaise, discomfort and headaches were very obviously genuine, but later the patients appeared fitter and more suited to their existence. Thus, sub-mucous resection is a good operation in West Africa in the coastal and semi-coastal belts and is to be recommended. The complications, as there is less coryza, tend to be less also. One hundred and five cases of nasal obstruction with varying degrees of septal deviation were seen, and thirty-three sub-mucous resections were performed, all the operations being on Europeans, civilian or military.

Headache was a very frequent complaint in the Tropics when the men had been in the country a few months. The Negro rarely came to the Ear, Nose

and Throat Department on this account. The previously deflected nasal septum, with the increasing hypertrophy of the middle, and at times, the inferior turbinate, in the European, produced pressure symptoms such as sphenopalatine neuralgia, and vacuum frontal headaches. A number of the cases appearing with a question of nasal etiology for these headaches showed little to account for the trouble, but many were considerably helped or cured by simple treatment, such as painting the middle turbinate with silver nitrate, or by removal of spheno or hypertrophic areas.

Nasal furunculosis occurred infrequently as in Great Britain - only two cases being seen, this is a notable difference from the numbers of otitis externa (q.v.)

Though there is considerable discussion of tropical parasites in the nose, no cases were found in Nigeria (Myiasis narium).

Allergy. Though the rapid and luxuriant growth of vegetation in the tropical and sub-tropical regions leads one to expect more allergic reactions in predisposed individuals there resident, the tendency of opinion is at present to the side of there being no allergy in the Tropics. Coca, Walzer and Thommen⁽¹⁾ state on the authority of the Secretary of the Government, that no cases of hay fever have occurred in British Guiana, and Freeman⁽²⁾ agrees with this view,

(1) Coca, Walzer & Thommen. Asthma and Hay Fever in Theory and Practice, London 1931.

(2) Freeman, Lancet, Sept. 12, 1942.

but Clearkin⁽¹⁾ is of the opinion that the condition occurs frequently there, that the clinical features are typical, that skin tests are positive to pollens, and that treatment of early cases by desensitization is satisfactory. Cases are recommended to leave the temperate climates for the Tropics where they are still assured that no hay fever exists, and develop typical attacks shortly after their arrival. All races seem to be affected by the condition - though personal experience with African Negroes showed few cases of it amongst them.

In Tropical and sub-Tropical countries hay fever is not seasonal in incidence as grasses pollinate at any time throughout the year after rainfall. Bahama grass (*Capriola dactylon*) is now common in Nigeria and may be a frequent cause of the disease, as in other countries. Sugar-cane pollens, too, are probably the source of irritation in certain areas. In our experience the nasal mucosal appearance of allergic conditions often presented itself - many of the cases of nasal obstruction may have been allergic and six cases of definite hay fever were treated by ephedrine nasal sprays or sub-mucosal injections. In all, fourteen cases were definitely diagnosed as allergic, but many others might have been placed under that heading. No severe cases were encountered and treatment appeared satisfactory. Desensitisation was an undertaking involving an extensive botanical knowledge

(1) Clearkin. Lancet. April.17, 1943, p.509.

of the country which was not available to us.

Nasal Polypi. The number of cases of nasal polypi was small (seven), and some of these probably originated at home. One of these occurred in a civilian of several years' residence in the Colony and who also complained of hay fever, he was apparently cured by removal of the growths. One native had nasal polypi suggestive of allergic nature.

Sinusitis. There is a very marked tendency for the acute exacerbation of previous chronic infections in Nigeria and many cases of sinusitis were seen on this account or because they gave more trouble after the turbinates had enlarged and either produced or increased the obstruction. Also in the dry North the irritated nasal mucosa in cases of sinusitis tended to produce symptoms associated with crusting or excoriation. The surgery of the sinuses was not altogether satisfactory as the nasal healing appeared always to be delayed especially if the case was allowed to proceed to the drier areas. Resistance was low in many of the cases and after Caldwell Luc's operation on the maxillary sinus, the time taken before wash-out was clear often was more than double the period which would be anticipated in such a case at home. Intra-nasal antrostomy did not give good results in the few cases on which it was tried at first, and it was therefore used very infrequently towards the end, the radical operation being little more difficult to perform satisfact-

satisfactorily and producing very much better end results, with less tendency to closure of the intra-nasal opening, and with no more time usually in hospital in the Army, as cases must show clean wash-outs before final discharge.

Nasal infection was not as common in Nigeria as in Britain, but as has been shown more trouble was apt to be encountered with infection previously present, and sinusitis patients even though the condition appears to have healed well are not advised to reside in the Tropics. In all, fifty-nine cases of sinusitis of all types were seen, divided as follows:

Acute maxillary, (including one dental case)	7
Chronic maxillary (including four dental cases)	37
Acute frontal	2
Chronic frontal	7
Sphenoidal	1
Pan-sinusitis	1
Ethmoiditis	2

This is a very much smaller number of cases than would have been expected in Britain and serves to illustrate the fewer acute early cases as compared with chronic varieties. Two or three of our acute cases are probably superimposed on chronic infections.

Craig⁽¹⁾ reporting on the first thousand cases attending an Ear, Nose and Throat Department of a Military Hospital in England lists one hundred and forty cases of nasal sinus infection, fifty-seven

(1) Craig. D.H., J.R.A.M.C., 74, 2, 86, 1941

of them being acute. (See Table, Fig. 12) One African Negro presented a large and very typical frontal sinus mucocoele which diagnosis was confirmed at operation. This must have been an extremely unusual entity as the drainage from the sinus normally appears to be excellent. There was no apparent reason for obstruction in the nose in the patient concerned. Five of the above cases were in Negroes, two of these showing acute frontal sinusitis. The frontal sinuses owing to the slanting forehead of the Negro tends to be enlarged, and thin-walled, (1) and this may produce earlier symptoms. The chronic cases of sinusitis in the Negro were seen, in spite of this fact, in the very advanced stages of the disease. In one case the cause of the condition was diagnosed as yaws of the nose (q.v.). There was a great deal of granulation tissue and foul pus in the nose, with osseous destruction and a lot of headache and debility. The Wassermann reaction was strongly positive and the condition cleared slowly with anti-syphilitic remedies. Though yaws is a very common condition in Nigeria few cases appear to have been described with nasal signs.

The cases of acute sinusitis unassociated with previous history of sinus infection were on the whole mild and showed hypertrophic rhinitis. They cleared easily with conservative treatment in the form of menthol inhalations, hot applications to the

(1) Walsh & Pool, A.M.J. Med. Sc. 196:2:252.

face, and ephedrine nasal drops, and no case to my knowledge proceeded to the sub-acute stage.

As an example of the difficulties of surgery of the sinuses in men with resistance reduced by long residence in Nigeria, a case may be quoted of a man sent down to me from the North, who had had two attacks of severe acute maxillary sinusitis, and who on examination was found to have a chronically infected right antrum.⁽¹⁾ The condition failed to resolve satisfactorily after Caldwell Luc's operation, and infection developed in the cheek, and five weeks after operation a diagnosis of meningitis was made, though no organism was grown from the cerebro-spinal fluid. The meningitis was treated apparently successfully with a sulphonamide, but relapses occurred and finally signs showed that a cerebellar abscess was present, and operation, though two of three abscesses were found and drained, failed to save the unfortunate patient's life. The Pathologist reported that infection had passed via the infra-orbital foramen and canal to the middle fossa.

Neoplastic disease. The large majority of natives of Nigeria have no medical supervision whatever, and that which is available is characterised by lack of facilities, interest, or ability. The published data consists of reports of individual observers concerning material that has come within the field of their observations from which nothing more than a superficial estimate can be made of the

(1) J. Laryng & Otol. 58:196 (May) 1943.

conditions that exist at large. The facts now available give a much different idea from that originally held. It was at one time almost universally held that cancer was quite rare among Africans. This opinion was formed as a result of information of travellers or medical people with limited contact with natives. But with longer exploitation of the country, and with a wider establishment of hospitals and laboratories, and with the use of modern means of diagnosis of cancer, this opinion has been reversed, and it is now conceded by authorities that cancer is common in Africa. The occurrence of many types of malignant disease has been established, but there are some peculiarities of cancer among natives which, if not characteristic of Africa, are at least different from cancer as found in Negroes of America. Some of the outstanding features of African cancer are the prevalence of primary carcinoma of liver, prevalence of melanoma, unusualness of cancer of stomach, and prevalence of skin cancer. It is difficult to explain the racial differences in the incidence of cancer. Diagnosis is not the sole factor, because skin cancer, which is relatively easier to detect than internal cancers, shows even greater racial differences in incidence than do cancers less likely to be detected. Then also racial differences are most marked as age increases, and there is no reason why any form of cancer is better diagnosed in youth than in old age. Evidence seems to contradict some writers who believe the



effect of civilisation has been to increase cancer in Negroes. Those diseases of civilisation, the so-called degenerative diseases of later life which impair vitality, affect the Negro at an earlier age than they do the whites, but cancer, at old age, when the degenerative diseases are most active, is less prevalent in the coloured people than in the whites. Holmes⁽¹⁾ thinks that the most probable interpretation of racial differences in cancer incidence is that it is a result of inherent differences in race, the nature of which he does not venture to say. There is probably no type of neoplasm that occurs in one race to the exclusion of others, although there is a considerable variation among races as to the incidence of the various kinds of tumours and of the organs affected. Some of these variations are due to differences in the nature of the causal stimuli to which races are exposed and which are incident to the habitat and habits of the races, while other variations are without an obvious explanation and are attributed to inherent racial characteristics. The Negro, both in Africa and America, shows a definite type of tumour distribution that is more or less peculiar to him. Strachan⁽²⁾ in a survey of cancer in the South African Negro found that the only difference between the primary incidence in the whites and Negroes was the high rate of liver cancer which occurred in early life, and this finding

(1) Holmes. Am. J. of Cancer. 25:358:1935

(2) Strachan, J. of Path. & Bact. 39:209:1934.

has since been confirmed by Berman⁽¹⁾ who out of two hundred and twenty-five cancers in Negroes found 90.5 per cent to be hepatic. Other reports confirm the high liver cancer percentage. (2), (3), (4), (5), (6), (7). Ram (8) describes a case of carcinoma of the oesophagus in a Negro and comments on the rarity of this lesion compared with other Negro neoplasms. Smith and Elmes⁽⁹⁾ surveyed five hundred classified tumour specimens investigated over eight years in Lagos, Nigeria, taken from natives, as a fair representation of the types of tumour occurring in the country. Specimens were sent into this central laboratory from all parts of the Colony, as no other satisfactory pathologist was available.

There were 225 carcinomata (45% of total)
 155 of these were glandular
 63 were squamous
 7 were basal

One hundred and eighty tumours were diagnosed as sarcomata, and these were divided into:

Kaposi tumours	10
Melanomata	40
Mixed parotid	18
Endotheliomata	17
Adamantinomata	13
Cylindromata	2
Peritheliomata	2
Teratomata	2
Chorionepitheliomata	1

- (1) Berman, S.A.M.J., 1:12:1935, & S.A.M.J., 5:54:1940.
 (2) Hawes, St. Barts. Hosp. Rpt. 41:161:1905
 (3) Pine, S.A.M.J., 17:87:1921
 (4) Leipolt, S.A.M.J., 20:257:1925
 (5) Watkins, S.A.M.J., 20:257:1925
 (6) Prates, S.A.M.J., 14:95:1940
 (7) Gillman, S.A.M.J., 5:46:1940
 (8) Ram, E.A.M.J., 11:368:1934
 (9) Smith & Elmes, Ann. Trop. Med. 28:461:1934.

The order of site of occurrence of these tumours was as follows, skin, lymph glands, liver, bones, female genitalia, orbit, carotid region, and limbs. Twenty-nine cases, that is 5.8 per cent, were found in children under ten years, and ten of these were round-celled orbital tumours.

Our personal experience of neoplastic disease in the native was small and few ^{WERE} seem to occur in the ear, nose and throat. Two civilian natives were treated for advanced carcinoma of the maxilla, the diagnosis being complicated in these cases by such tropical diseases as Gangosa, and the more acute varieties of Goundou (q.v.). Mixed cell tumour of the parotid was also encountered. The relative immunity of the native Nigerian to nasal disease as a whole does not apply as far as we could understand to carcinoma of the accessory sinuses of the nose, we encountered a very limited number of civilian Negroes with diseases of the ear, nose and throat, who were over thirty to thirty-five years of age. Personal communications from the Surgeons in charge of Hospital wards in the country seemed to confirm this conclusion.

Leprosy. Because Africa is one of the oldest endemic centres of leprosy, Negroes have been closely involved with the history of the disease. Particularly they have been cast in the role of conveyors of the infection where they have been taken as slaves. While much has been written as to the geographical distribution of leprosy, little can be gleaned from

the accumulated literature as to what extent differences in racial susceptibilities have been a factor in the extremely variable amounts found in different countries. Hirsch⁽¹⁾ writes about the special liability of Negroes in places where there are mixed populations and where the disease is much more common among Negroes and those of mixed blood than amongst white people to whom it is relatively, or absolutely, rare. But there is great variability in the distribution of leprosy in Africa amongst the natives, a fact that is against the idea of a uniform racial susceptibility amongst Negroes. Hopkins and Denny⁽²⁾ state that numbers in the United States of America are in equal proportion to whites and Negroes in the population.

In 1937 there were five thousand six hundred and seventy-three lepers in resident institutions in Nigeria, and by 1940 the number had risen to seven thousand. Of one hundred and sixty cases of nasal leprosy in Ita Colony in Southern Nigeria, sixty-two per cent of the lesions were localised in Little's area on the anterior part of the septum - or at the junction of a series of vessels (blood vessel ectasia is said to predispose to attack in an area of the body)⁽³⁾. The actual resident cases are small in number compared with the actual numbers of cases in the population,⁽⁴⁾ as there are said to be two hundred thousand lepers in Nigeria (or 10 per 1,000 population)

(1) Hirsch. Handbook of Geograph. & Hist. Pathology.
London. 1885.

(2) Hopkins & Denny, J.A.M.A. 92:191:1929.

(3) Leprosy Review, 1937, 8:4:152.

(4) Leprosy Review, 1940, 2:2:79

this is less than the supposed numbers in India and China.

In anaesthetic leprosy the throat is rarely affected and not until the disease has lasted at least five years. Then there may develop anaesthesia of the palate and pharynx, with paresis and atrophy. But tuberculous leprosy shows itself initially in the nose in 5.9 per cent of cases.⁽¹⁾ In the diagnosis of this variety of leprosy thus, the nose may be an easy area from which to obtain the causal organism, hence to prove the origin of the disease. Radna⁽²⁾ found a positive nasal swab in 68.65 per cent of the cases, and incision of the lesions only produced 76.36 per cent positives by ordinary methods. Other investigations have found twenty per cent positive swabs in treated cases, and forty per cent in untreated cases.⁽³⁾ Both sides of the nose should be swabbed in every case as only thirty per cent show bilateral positive nasal swabs.

Thus the nose is usually involved at some stage in the disease, and usually at a fairly early one, if the lesion is not seen primarily in this site. The initial lesion of the disease in the nose consists probably of a specific affection of the mucous membrane usually in the form of infiltration

(1) Rev. Brasileira Leprologia. 1938. Vol. 6, Spec. No. 35-48

(2) Radna. Ann. Soc. Belge de Med. Trop. 17:4:555. 1937

(3) Ann. Soc. Belge de Med. Trop. 18:2:29;. 1938

and ulceration on the cartilaginous part of the nasal septum in the anterior part most frequently. This may be present in the latent stage of leprosy for years before the appearance of the first actual tubercles in the skin, or the development of the first nervous symptoms. If nasal catarrh and bleeding are overlooked, the development of a nasal tone in the voice may be the first symptoms to direct attention to the air-passages, although examination may then reveal extensive disease.

Just as tuberculosis generally finds its first lodgment in the apices of the lungs, so leprosy most commonly originates in the nostrils.⁽¹⁾ The early stages may show a reddish and hard-looking thickening, but when it comes under observation, it is pale like the anaemia of tuberculosis. The tissues look devascularised, dull, leathery, and in the nose and larynx they suggest the appearance of having been infiltrated with tallow. In the early stages of leprosy there is always a chronic coryza followed by epistaxis attacks.⁽²⁾ Many observers look on these as characteristic and of a diagnostic value analogous to that of haemoptyses in pulmonary tuberculosis. The nasal secretion may thus be full of leprosy bacilli, and the view is being increasingly held that not only does the infection primarily attack the nose, but that it is by contact with contaminated fingers that contagion is passed on.⁽³⁾

(1) Sticker: Laryngoscope. May 1898

(2) St. Clair Thompson. Diseases of Nose & Throat

(3) Soc. Med. des Hop. July 23:1897.

Thus the easiest method of the diagnosis of leprosy is from nasal swabs which should be taken from mucus far back in the nasal fossae on both sides, or from the actual lesion if present. The most satisfactory results would thus be obtained by a Laryngologist if suspected cases could be examined and swabbed by him. This method was commenced in the neighbourhood in which we were stationed in Nigeria, and though no early lesions were seen there, twenty per cent of the cases suspected of having the disease showed positive swabs from the nose. None of these cases had nasal symptoms at the time of examination and it was found that the results of nasal swabbing compared favourably with the final diagnosis.

No cases of active advanced leprosy were seen in either Negro recruits or soldiers. Three cases of palatal scarring were noticed in routine examination of the civilian cases. Thus in ordinary work in Nigeria the Laryngologist is unlikely to meet the disease often as yet, in spite of the large numbers of cases. No doubt the reverse will be true when the medical services are more adequate and are taken more advantage of by the native.

Syphilis. The disease entered Nigeria originally with the Arab trader crossing the Sahara and the Northern areas thus have had a longer experience of the disease than the rest of the country. Hence certain tribes (such as the Felanias though

these may have entered the area, bringing the disease with them, as settlers) show milder reactions, but there appears to be no climatic effect on the immunity to the disease. The non-tolerant races, if infected by strains from the relatively immune peoples, show the same severe reaction as if they had acquired the infection from amongst themselves.

Roy⁽¹⁾ amongst one hundred and thirty-five cases of syphilis in the African Negro, found nine perforations of the hard palate, seventeen perforations of the nasal septum, and twelve cases in which these two lesions were combined. Twenty other cases had bone lesions. He found the Negro nervous system very resistant to infection with spirochaeta pallida as it was also resistant to other nervous affections, and he discusses the relative immunity due perhaps to the lack of intellectual activity. This appears to need further amplification as a theory as we have not noticed previous intellectual activity in several cases of nervous disease in the European to be of a much higher standard than that of the average Negro. There is a disease one may meet in Nigeria, Majakara, which occurs in the Negro of about thirty years of age. Ulceration and perforation of the septum and palate appear and fail to respond to anti-syphilitic treatment in spite of the positive Wassermann tests. Cachexia develops and death occurs in all cases in spite of treatment of any kind.—Because there is a higher

(1) Roy, J.N., Ann.Otolaryng. 1920, 29: 79.

percentage of untreated syphilis in Nigeria than in Great Britain, more cases of advanced manifestations are met with in the ear, nose and throat in routine examinations. The conditions do not appear to be different from European types and do not require description.

Dental hypoplasia in congenital syphilis in Negro children is less frequent than in white infants. In two hundred schoolchildren inspected by ourselves in a routine examination of the school as a comparison with the ear, nose and throat of the British child, no cases of Hutchinson's nor of Moon's teeth were noticed. Jeans⁽¹⁾ says that characteristic Hutchinson's teeth rarely occur in the Negro.—Much of the American literature on syphilis is concerned with the Negro. It deals chiefly with its prevalence and its clinical peculiarities as compared with white people. In many respects the natural history of syphilis is similar to that of tuberculosis. Both have a typical reaction in 'virgin soil', both are modified in the course of time as a community resistance is developed, and both are intimately related to environmental conditions.

Syphilis was not introduced to all the races of people simultaneously. With a considerable degree of accuracy the time of the first infection can be correlated with the type of disease reaction, especially with the amount and nature of neurosyphilis.⁽²⁾

(1) Jeans, Am. J. Dis. Children. 20:55:132:1920

(2) Moore, Bull. Johns Hopkins Hosp. 33:231:1921

Yaws. The literature on yaws is very extensive, but most of it has to do with the much debated question as to whether it and syphilis are the same or different diseases, and little of it is concerned with the differences, if any, of its effects on different races. It is very evident that from the many statistics and case reports in the literature that yaws is chiefly a disease of Negroes, seemingly not because of an unusual predilection for these people, but chiefly because of the geographic distribution of the disease. It is a tropical and sub-tropical infection and practically never invades temperate zones. Of the Negro countries, it is common in Tropical Africa, the West Indies, and in those parts of Central and South America with similar climates. It is seen in temperate climates, but rarely in whites and those ^{IV}sailors and officials from infected areas. (1) In those countries where the disease is endemic it is not uniformly distributed, for which various explanations have been given, such as indigenous hygienic habits, facilities for treatment, the concomitant amount of syphilis, rainfall, altitude, and the presence of certain insect VECTORS. It is very prevalent in West Africa and French Equatorial Africa, the majority of the population showing evidences of infection. Butler⁽²⁾, an ardent advocate of the unitarian hypothesis of yaws and syphilis, believes that what is called yaws is a massive infection of new races with untreated syphilis. According to him, tropical

(1) Fox, Arch. Dermat. & Syph. 6:675:1922.

(2) Butler. Am. J. Clin. Path. 9:1:1934, and U.S. Naval M. Bull. 35:6:1937.

countries with a low incidence of yaws signify that syphilis is under control, or that it has not been introduced in the general population. Turner and Saunders⁽¹⁾ say that in Jamaica the black, white, brown and coloured races may be equally easily infected, although they point out that children of white and Negro crosses have a greater resistance. Pardo-Costello⁽²⁾ found that in Cuba, where 41.5 per cent of the population is Negro, that the white and coloured are equally infected, and there is no difference in the development of lesions and in the clinical symptoms found. Turner⁽³⁾ from findings on cases and animal experiments, says that *Treponema pallida*, the causative agent of syphilis, possesses pathogenic properties which differ from those of *Treponema pertenue*, the causative agent of yaws, and second, that the differences noted between yaws and syphilis in man are due at least to inherent differences in the causative agent of the disease. Harley⁽⁴⁾ examined 5,597 cases of yaws in Liberia, where about eighty per cent of the population have the disease, and where venereal syphilis apparently does not occur. He tabulated the frequency of occurrence of what he calls the cardinal symptoms of yaws in order to identify all the cases as being this disease. He also gave evidence that such locally occurring disorders as goundon, gangosa, and juxta-articular nodes, formerly believed to be separate disease entities, are in fact, manifestations

(1) Turner & Saunders. Rpt. of Jamaica Yaws Cttee.
Kingston. 1933.

(2) Pardo-Costello. Arch. Dermat. & Syph. 40:762:1939.

(3) Turner. Am. J. Hyg. 25:477:1937.

(4) Harley. J. Trop. Med. 36:217:1933.

of yaws. Goundon and gangosa are naso-pharyngeal tertiary lesions, according to Turner, while juxta-articular nodes are the fibrotic tumours situated over the olecranon and lower part of the femur, occurring in the tertiary stage of both yaws and syphilis. He came to no definite conclusions but proposed to use his findings as the basis of a statistical comparison of the lesions of the two diseases that would indicate a definite answer as to their identity or difference. Yaws is probably one of the most frequent diseases in the Eastern and Southern provinces of Nigeria, but its prevalence is greatest in the Cameroons. It occurs as a 'disease of the Bush' and disappears partially in the civilised educated native in Lagos. In 1937, one hundred and ninety-four thousand cases were treated (twenty-seven per cent of total treated Nigerian native patients) and this compares with nineteen thousand one hundred and fifty-five cases treated for syphilis, and seventeen thousand and seventy-four treated for gonorrhoea. ⁽¹⁾ The disease commences at the age of two to five years and the effects are produced throughout life. Simpson ⁽²⁾ says that it is rare to see the primary lesion, though it rarely occurs in the ear, nose and throat. He saw thirty-six primaries in nine hundred and twenty cases:-

26	Near genitalia
4	Lower extremity
3	Facial
3	Axilla and chest

(1) Med. & San. Rpts. Nigeria. 1937.

(2) Simpson, W.A.M.J., 10:1:p.14.

The secondary lesions occur on the face and chest usually, as papules and later develop into yellow ulcers, soon the whole body may be covered (by the fourth to the seventh week). The tertiary manifestations show as rhagades, ulcerations and perforations of septum and palate, and as horny lesions. Gangosa may be the tertiary stage, but is very rare, and the only case we saw diagnosed as Gangosa proved on investigation to be carcinoma of the maxilla. In a series of cases of yaws from the Wum district, it was stated that no case of Gangosa ever had been encountered in that area, though almost the whole population had yaws. But of fifty-five cases of Gangosa attending Bamenda Hospital (Simpson) only three had no history of yaws. Thus dependence on yaws, at least partially, seems probable. The condition commences inside the nose, may-be with ulceration of the soft palate as well. First, the cartilages and soft tissues are ulcerated and perforate, then the bone softens and disappears leaving proliferative granulation tissue. The hard palate is rather more resistant than the other nasal bones, but Simpson saw two cases of perforation of the hard palate. Later the nose is destroyed and the face appears flat; but this occurs only after the passage of a number of years when healing with gross scarring has occurred. The lips are drawn upwards showing the teeth, and the lower lids, to produce ectropion. The bone changes are similar to those of yaws in other sites, being usually a slow rarefaction. Symptoms of severe rhinitis appear, with nasal obstruction, and at times epistaxis. Phonation

may be almost lost. Extension may occur to the frontal bone with later herniation of the brain through the glabella. Treatment with anti-yaws (similar to anti-syphilitic) therapy produces excellent results in all cases described. The occurrence of Gangosa in white men has been recorded. (1)

Goundon is a more infrequent disease than Gangosa, and is similarly indefinitely related to yaws. It appears almost entirely to be located in West Africa in Negroes and may be associated with exostoses in any other bones of the body. (2) There appears to be an over-growth of bone of the maxilla on either side of the nose with a horn-like appearance resulting. One case in my experience came from Bermenda in the Cameroons and had a marked positive response to tests for yaws though she denied any infection to her knowledge. She was a child of twelve years, healthy, and with no symptoms, and the condition had ceased to grow after four years. Another case with suspected Goundon occurred in a child of eight years, but the osteomatous outgrowth was at the angle of the mandible, and though it was removed, there appeared to be no characteristic pathology to prove the diagnosis.

(1) Myerson, M.C., Laryngoscope, 43:5:394:1933.

(2) Roy, J.N., Arch. Intern. de Laryng. March 1925.

NASOPHARYNX.

Adenoids. If climatic affects influence the size of the adenoids, it is not surprising to find the adenoids very small in the series of native children examined, for the difference in the amount of adenoid tissue occurring in Scotland compared with that found in Southern England is quite striking. St. Clair Thompson⁽¹⁾ records that the Negro is but slightly affected by hypertrophy of the adenoid tissue. Grazzi⁽²⁾ found that pathological conditions of the adenoids were more frequent in temperate, cold, and damp climates. Cardone⁽³⁾ and Trifiletti⁽⁴⁾ found few cases in the Naples children. Campbell⁽⁵⁾ was of the opinion that starchy and carbohydrate foods were directly causal when given in excess to children; but Negro children appear to be unaffected by a still more unbalanced diet. Out of two hundred unselected Negro school children in Ibadan, from the ages of four to ten years, only 2.9 per cent showed any adenoids of note, and none of these appeared to be causing damage to health or mouth breathing sufficient to warrant surgery. Cheatle⁽⁶⁾ examined one thousand individuals and noticed a growth in 43.4 per cent in England. Hennebert⁽⁷⁾ found, in a school of five hundred poor children, adenoids in thirty per cent of the children. Burger⁽⁸⁾, by adding and comparing

(1) St. Clair Thompson. Diseases of the Nose & Throat.

(2) Grazzi, V, Clin. Moderna, x:4-5, 6-7, 1904.

(3) Cardone, Arch. Ital. di Laryngol. V.5.

(4) Trifiletti, Arch. Ital. di Laryngol. 1895.

(5) Campbell, H, Lancet, 1921, II, p.1079.

(6) Cheatle, A.H., J. Laryngol. 1902, p.282.

(7) Hennebert, C, La Clinique, July 12, 1902.

(8) Burger, H., Arch. f. Laryngol. 18-No.2.

the statistics compiled by various authors from the examination of twelve thousand children states that the symptoms of speech and facies only indicate adenoids in 3.3 per cent, but local examination will reveal their presence is, on the average, 29.8 per cent. He does not say how many of these 29.8 per cent would need the adenoids removed subsequently. But Wilbert⁽¹⁾ whose statistics furnish a higher percentage (sixty-two per cent) found that in half of them symptoms were referable to the growths, twenty-seven per cent hearing, and five per cent nervous system. Thus he indicates that surgery is needed in a large majority of cases in European children.

PHARYNX.

Many of the tribes of Eastern Nigeria practice removal of the uvula for medical or religious reasons. No harm appears to result from the ordinary removal if trauma does not extend into and cause fibrosis of the soft palate.

Tonsils. The frequency of lymphoid hypertrophy of the tonsils in British school children varies from 33.4 per cent, (Thorne)⁽²⁾ to 39.48 per cent (Robertson)⁽³⁾. Amongst two hundred African school children examined, twenty-four (twelve per cent) showed some enlargement, though only three needed removal of the tonsils on account of size and infection. Sixty-six children had congested tonsils, some of these tonsils being quite markedly increased in vascularity, but these latter did not amount to more than five per cent of the

(1) Wilbert. Dent. Med. Woch. Feb. 5. 1903.

(2) Thorne, L.T., B.M.J., April 9, 1904.

(3) Robertson, W., B.M.J., Feb. 23, 1907.

total. Adult African Negroes rarely suffer from acute tonsillitis, two cases only being seen amongst native troops, with, in addition, two cases of Vincent's infection. Two Negroes were recommended to have their tonsils removed on account of chronic infection. Ninety-six cases of chronic tonsillitis were seen, ninety-four being in European individuals, and fourteen of these patients had their tonsils removed by dissection. Eight cases of acute tonsillitis were seen in Europeans. It was noticed that previous chronically infected tonsils were rendered worse by residence in Nigeria, but few cases of severe early acute infections of the tonsils were seen. The Hospital was the central European military hospital, and though cases of chronic tonsillitis would be sent there for operation, the acute cases would be retained locally in the Units until they were at least fit to travel as long distances were involved. One case travelled twelve hundred miles for the operation of tonsillectomy. Sepsis of focal nature and often laid to the blame of the tonsils was common. One case had several attacks of fever believed to be ordinary malaria, but the attacks did not respond well to anti-malarial treatment, and each was preceded by an attack of acute tonsillitis. Finally the case was diagnosed as one of focal nephritis, and, after tonsillectomy, ceased to have the attacks. As chronic sepsis and toxic foci appear to have more serious effects in this area (Nigeria) removal of the tonsils if the operation seems indicated, should not be delayed.

The operation of tonsillectomy in the Colony is satisfactory, but as haemorrhage may be more likely, there are certain precautions which are advisable. The first two cases on which we performed the operation caused anxiety on account of the prolonged oozing and marked shock which rapidly developed. Thereafter no trouble was encountered when the cases were carefully prepared by the administration of ample amounts of fluids and glucose by mouth for forty-eight hours before operation, by the administration of calcium lactate 60 grains a day for two days, and by making sure the haemoglobin content of the blood was not unduly reduced, as is often the case in malarial patients. The calcium was used as there was a tendency to believe a shortage of this occurred in Europeans in the area. Besides these precautions blood films and blood counts were usually done, and two days on full doses of quinine or mepacrine were found advantageous. The surgical cases were often noticed to develop attacks of malaria shortly after operation due to the shock of the procedure, and if the blood quinine were high during the day of operation, no attacks developed.

Post-operatively it is important to watch the patient carefully, and prevent over-heating and undue cooling. Either of these very rapidly ensue. Ice is helpful and a fan makes the patient more comfortable. Fluids should be pushed as before operation. Though bleeding during operation occurred rather more profusely in West Africa, no difficulty occurred in

overcoming it.

Eighty-nine per cent of two hundred school children examined in Ibadan showed enlarged cervical glands of moderate degree, in no case was there gross adenitis. This compares with the 44-49 per cent on the other side of the country in Port Harcourt (Page 11, fig.1). In this latter group forty-six per cent of the better class of Negro children show throat defects, and only twenty-four per cent of the average school children. This is probably a similar number to the thirty-three per cent of ours who showed mild congestion of the tonsils.

It is an interesting fact that the better class native in the Port Harcourt series showed a less healthy throat. We noted a marked increase in nasal and throat conditions as well as ear defects, in the better class Negro clerk and office worker in Lagos. The only two Negro cases of marked hypertrophic rhinitis occurred in a well-educated native lawyer and in a customs official, both of whom would no doubt tend to follow or try to follow European example in clothing, diet, and living conditions. Attention is called to the association of enlarged tonsils and defective diets in the Medical and Sanitary Reports of Nigeria, 1937, and to the higher incidence of throat defects in the better class.

Thus the Negro child appears to develop the normal congestion and slight increase in the tonsillar size as compared with the British type, but the response is less marked and it is unusual for it to go on to produce marked enlargement and infection of serious

nature. The glandular enlargement may indicate some septic influence. The tonsil is affected by the material filtered from the air by the nose, and this might account for the Negroid immunity from gross septic infection of these organs, as the broad nose will have less tendency to filter the air, and the higher temperature will keep the nasal resistance to infection from falling as it does when exposed to sudden falls in temperature in European climates. Again, if the European tonsil does produce an increased immunity to infections, particularly to the organisms which produce pulmonary disease, the reason for the Negroid susceptibility to infections of the lungs and bronchi might be understandable.

Vincent's Angina. No severe cases of the infection were seen in the throat, though the Hospital Dentist found many cases of rather marked oral Vincent's Angina associated with the prevalent gum retraction which occurred in Nigeria. (Windell) (1). Goldman (2) described seven deaths of the disease in Negroes in Cincinnati during 1929-32, there the infection occurred in equal numbers amongst the white and coloured populations. Six of the cases dying of Vincent's had chronic dental infections.

Agranulocytosis. This is believed to be unusual in Negroes as they are said to bear their pains without recourse to toxic analgesic drugs.

(1) Windell, Brit. Dental Journal. 1943

(2) Goldman & Kully. J.A.M.A., 101:358:1933.

In Nigeria this can be accounted for by the inaccessibility of medicaments with which agranulocytosis is so commonly associated. Norris (1) described a case in a Negro in the habit of taking large quantities of quinine, and it is believed that this was the provoker of Neutropaenia. Quinine is unusually associated with blame for this condition, and this is only the second case to be described as such. Groen (2) described another. Other cases of Negro agranulocytosis were recounted in papers by Tally and Griffith (3) and by Newman (4). Hutton (5) states he has had no cases after treatment of pneumonia with sulphonamides.

Diphtheria. All available statistics for Negroes whether in Africa or in America, indicate that these people are much less susceptible to diphtheria than are white people. Hirsch (6), Clemov (7) and Hoffman (8).

Medical writers have been especially impressed with the rarity and mildness of the disease among the natives in certain parts of Africa, and have been led to enquire if their immunity is a natural one or if it be acquired. Kleine and Knoo (9) state that in East Africa diphtheria is completely unknown. Not a single positive was obtained in one hundred and one Schick tests, ninety-five in children of six to fifteen

(1) Norris. J. Lab. & Clin. Med. 22:124:1936-7.

(2) Groen. Nederl. tijdschr. v. geneesk. 78:3444:1934.

(3) Tally & Griffith. M. Clin. N. Am. 13:1079:1930.

(4) Newman. Texas State J. of Med. 30:452:1934.

(5) Hutton. E. African Med. J. 16:74:1939.

(6) Hirsch. Handbook Geog. & Hist. Path. London. 1885.

(7) Clemov. Geography of Disease. Cambridge. 1903.

(8) Hoffman. Race Traits & Tendencies of Am. Negro.

(McMillan & Co. 1896).

(9) Kleine & Knoo. Deutsche. Med. Wehnscht. 56:46:1930.

years, and high antitoxins were disclosed in the serum of eleven individuals.

LARYNX.

Congenital laryngeal stridor: This condition appears to occur in Negro children in Nigeria quite commonly. A case was seen with typical neuromuscular inco-ordination in one of the Civilian Hospitals by myself, and others were described to me by Civilian doctors.

Laryngitis: The conditions prevailing amongst the older civilian white population tend to predispose to chronic laryngeal conditions and though only ten cases of chronic laryngitis were seen most of these occurred in the limited number of this type of civilian case sent to see the Military Laryngologist. Excessive smoking and drinking with over-use and mal-use of the voice were often observed and these occurring in the dry, dusty Northern areas must produce considerable laryngeal irritation. Most of the civilian officials and traders spend long periods in the drier areas on tour in vehicles on dusty roads. The damp atmosphere of Lagos where a number of these men finally remain in the few years of seniority is not altogether suited to their laryngeal troubles⁽¹⁾. Acute laryngitis occurred in seven cases in European troops and responded well to treatment. One case of blastomycosis of the larynx in a European Civilian was sent home.

(1) St. Clair Thompson., Disease of the Nose & Throat, p.524.

Tuberculosis. Tuberculosis in Africans progresses more rapidly, is more fatal, and has a different anatomical picture than in whites of European stock. The explanation of this phenomenon, which is observed not only in African Negroes, but also, to some degree, in Negroes wherever they may be, involves several of the most debatable problems of tuberculosis. A genotypic low racial resistance, if this is the true explanation of Negroes' tuberculosis, dooms him to a continual high morbidity and mortality, except for the changes that can be brought about by improvement in living conditions and by lesser exposure to infection. On the other hand, a mechanism that permits by experience an increased immunity ultimately, but slowly, will result in a better ability to successfully deal with tuberculosis in spite of, or even because of, his present condition. Human races are enough alike to expect that similar experiences will bring about similar results. The treatment of tuberculosis is not advanced in Nigeria and there is no Laryngologist to observe the laryngeal manifestations. In a limited experience of Negro Civilian Hospitals, several cases of tuberculosis were seen and most of the pulmonary cases had marked laryngeal manifestations of the disease. The appearances did not differ from those seen in advanced cases of tuberculosis of the European larynx. Other varieties of laryngeal disease in the Nigerian native are rare. Voice production is natural, excessive use of tobacco and spirits is rare, and the upper

respiratory tract is usually healthy. The mouth and stomach show less abnormalities than in Europeans, and rheumatism, gout, and allergic conditions appear to be uncommon. Even in the dry North the natives have less laryngeal defects than might be expected.

EAR.

A large number of conditions seen in European troops were related to the ear. There is a greater tendency to a moist external auditory meatus owing to greater sweating, more baths taken, and increased incentive to swimming. Fungal infections also occur more frequently in the Tropics and their incidence is notable in the external meatus.

The skin as the organ which comes into closest contact with the environment of the individual, possesses marked adaptive characteristics that permit existence under the most favourable circumstances. Also, the skin has functions, both secretory and excretory, that are nicely co-ordinated with the internal organs. Since the external conditions under which races live vary, and because there are many racial characteristics of the internal organs of the body that influence the skin, this organ and its appendages are correlated with race and vary in function and structure as widely as do the races. The skin of the Negro is a remarkable organ and is so constructed as to efficiently meet the demands of the circumstances to which the race is adjusted. Its pigmentation, sweat glands, vascularity, hair, and other features have attributes that share largely

in those physical peculiarities that make up this distinct race stock. One of the most unique characteristics of the Negro's skin is its resistance to external irritants. It is well known in industry that the Negro is less sensitive to action of skin irritants than the white man. In such occupations as work on grinders and driers in large factories, many industries will employ Negroes because they have found by actual experience that Negroes are less sensitive to skin irritation. (Schwartz)⁽¹⁾.

During the first World War, when large forces were employed in the manufacture of munitions, this resistance of the Negro's skin was in striking evidence. Among Negroes employed under the same conditions as whites, skin irritation was negligible, whereas it was a serious problem in whites. Pigment of the skin of the Negro and also an excessive sebum secretion protects against trauma from light.⁽²⁾

Many of the diseases which affect Negroes do so in a way not appreciably different from the way in which they do so in white subjects. On the other hand, there are conditions that occur among Negroes in Africa, almost exclusively, not because of a racial predilection, but because of the geography of the diseases and because of the intimacy in which these people in their more primitive existence come into contact with their environment. Attempts have been

(1) Schwartz * Tulipan. Occupational Disease of the Skin. Philad. 1939.

(2) J. Cutan. disease. 32:705:1914.

made to formulate a generalized explanation for the differences of disease patterns among Negroes and whites. No single factor may be given to explain the differences, and each disease may have several factors that can account for its variation between races, and theories are produced based on such factors as diet, environment, social conditions, genotypic physical characteristics and the psyche. (Walsh and Pool)⁽¹⁾.

Otitis Externa: The same increased tendency to affections of the external ear in Europeans as has been found in tropical regions in other areas was seen in Nigeria. Many factors are responsible for the greater incidence, and probably the continual dampness of the meatus is chief amongst them. This is associated with increased sweating, more frequent baths, and the greater temptation to swim in the warm sea or fresh water. High temperatures and humidity are important factors. The meatus does not dry so rapidly. a macerated surface develops, and towels or handkerchiefs may be used to mop the area. The increased moisture will favour the growth of organisms which have entered by some means, as above. Johnson⁽²⁾ regards swimming as a common cause of the condition, whether it be due to infection of the water in public baths, or to the forcing of infection into the meatus on towels. Daggett⁽³⁾ found that the

(1) Walsh & Pool. Am.J.Med.Sc., 196:252:1938.

(2) Johnson. Ann.Otol. 53:1:5: March, 1944.

(3) Daggett. J.L.O. 57:10:435:1942.

same number of infections occur whether the man swam in lonely bays or in a crowded harbour. Half of Daggett's cases had not been swimming within two or three weeks of the onset of the condition. Ellis of Lagos (Personal communication) did not associate swimming with otitis externa. Amongst the troops in West Africa there seemed a markedly higher incidence of the condition amongst bathers than non-bathers. Acidity of the skin is responsible, to some extent, for the destruction of organisms in relation to it⁽¹⁾, and excessive sweating may tend to prohibit the requisite acid concentration,⁽²⁾ or it may be that excessive bathing or introduction of fluid into the meatus may dilute or remove the acid. A reduction in the numbers of cases occurring amongst the troops resulted from the recommendation that 2 per cent Boric acid drops in spirit should be used liberally after each occasion the man visited the baths. If the solution were used immediately after immersion and before the meatus could become macerated, the spirit would wash out the moisture and harden the skin. Sea-bathing was not considered a serious causative factor in one hundred cases of this condition in Aden⁽³⁾, but here the causative organism predominating was *Ps.pyocyaneus*, in the present series this organism was not a common finding. Focal infection occurred in certain of our cases and its

(1) Arnold, L., et al. *Am. J. Hyg.* 1930:xi:355.

1934:xix:217.

(2) Marchionini, A., *Klin. Wachr.* 1938, xvii, 663.

(3) Morley. *B.M.J.* Feb. 19., 1938. 373-377.

elimination in a few did reduce the number of attacks; the general health is closely associated with this condition. Seborrhoeic infection of the scalp is frequently the source of the infection and should be sought for in all cases. Staphylococcal infection occurs more commonly in the Tropics and serious manifestations, such as pyaemia are not rare, boils in the ear are often associated and preceded by the infection in other areas of the body. Generalised furunculosis is often associated with latent malaria, and many of our cases responded more satisfactorily when placed upon a course of anti-malarial treatment. The occurrence of wax in any quantity was not often associated in these cases with infection of the external auditory meatus. Eleven cases occurred in the Negroes out of a total of one hundred and fifty-two cases in all.

Certain cases of otitis ~~media~~ in troops (white) were found almost incurable in West Africa and were recommended for return to Britain. The procedure of treatment was thorough cleansing of the meatus, a search for, and the removal of the cause, the use of germicides and astringents, protection of the inflamed part, and general supportive measures. In the early stages after cleansing and drying the meatus with spirit as far as possible, depending on the condition present, palliative measures may be necessary. Local palliatives, such as aluminium acetate wicks (8 per cent), phenol 5 per cent in glycerine, metacresylacetate, and physiotherapeutic

measures, may be combined with the internal administration of drugs of varying strengths. Sleep is to be assured to raise the patient's resistance. Later, the meatus may be treated with weak solutions of aniline dyes in water or spirit, corrosive sublimate in alcohol, three to ten per cent silver nitrate, or an ointment such as phenol, precipitated sulphur, and salicylic acid 9 grains of each to the ounce of Lanoline.

Prophylaxis is important once the man has had an attack of the condition, foci should be eliminated, a vaccine may be used, rest on holiday in a suitable climate is helpful, the scalp may need treatment, and such tonics as yeast and arsenic may be employed.

The total numbers of the various kinds of infection are to be found in the diagram in the summary. (Fig.12).

Skin diseases of the auricle: These were seen in white troops only and in numbers corresponding to those normally occurring at home. They included lupus erythematosus, impetigo, dermatitis and seborrhoea.

Cerumen: Forty-two cases were treated for cerumen which may be an increased number due to a slightly greater secretion owing to Tropical conditions. Craig⁽¹⁾ described twenty-five in a thousand ear, nose and throat cases, and amongst a thousand cases at home Birrell saw nineteen cases of cerumen (Fig.12).

(1) Craig. J.R.A.M.C. 72:2:1941.

Castellani and Chalmers⁽¹⁾ state that hypersecretion in the meatus is common and that cerumen is mixed with sebaceous materials in increased quantity due to hyperaemia, irritating dust, hot and damp air, swimming and sodden meat, and infection. Müller (quoted Castellani and Chalmers) ascribes the meatal narrowing and exostosis seen more frequently under Tropical conditions to diffuse inflammation of the meatal skin and subcutaneous tissues extending to the periosteum and leading to ossification and exostosis.

Deformities of the auricle: Congenital deformity is seen no more often than in Britain, and in Nigeria the natives appear rarely to deform the ear with rings and other ornaments, as in some other parts of the world. Small fibromata of the lobule are seen more frequently on the Gold Coast than in Nigeria, and may be related to the keloid tendency in the Negro. Though there are a greater number of sweat glands in Negroes due to the greater need for lowering of temperature^{(2), (3), (4)} the wax secretion is less, if there are any differences. Freer⁽⁵⁾ estimates that Negroes have at least seven per cent more sweat glands than whites, and that they are more equally distributed to obtain greater cooling.

Otitis media: A total of one hundred and seven cases of otitis media was seen which could be

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- (1) Castellani & Chalmers. Manual of Tropical Medicine.
(2) Aron - Phillipine J.Sc. 6:101:1911.
(3) Schmidt. Arch.f.Schiffs.v.Tropen.Hyg.5:207:1901.
Arch.f.Hyg.47:262:1903.- 65:17:1908.
(4) Engkmann.Virchoves.Arch.f.Path.Anat.140:125:1895.
(5) Freer. Phillipine J.Sc. 7:1:1912.

divided into acute, thirteen Negro cases and six white cases., sub-acute, six white cases., and chronic suppurative otitis media, sixty-six white cases and sixteen Negro cases which includes nine cases seen at the Civilian Hospital in Lagos, and selected from a very large number of Negroes attending the Out-patient Department, drawn from a considerable population in that city. Relatively few European troops develop new attacks of acute otitis media in Nigeria; but most of these clear up satisfactorily with conservative treatment, ~~though~~ only one Schwartz mastoidectomy was performed in a white man and that was considered suitable treatment in a long-standing case we diagnosed as subacute otitis media. Several of the acute cases dragged on to subacute type before clearing up completely. The small numbers of new cases may be the result of a low incidence of nasal infection amongst the white troops, as previously discussed. In treating these cases, protection and care of the meatus plays an even more important part than it does at home. Spirit drops (combined with two per cent. boric) are useful during, and for some time after, the attack. Sulphonilamide powder was tried as an insufflation in place of spirit drops, but as no advantage was noticed, spirit drops were once again used. Two native children showed mastoiditis enough to warrant operative interference, and one of these had a bilateral Schwartz mastoidectomy performed. This child was severely neglected and malnourished and appeared to have rickets and subclinical

avitaminosis of other varieties also, and these two cases should not be considered as proving that native children are prone to mastoiditis. The two Negro children were the only ones seen with such a marked infection of the ears in a considerable number of visits to the Civilian Hospital wards. No Negro adults were seen with acute mastoiditis and in the course of discussion with Civilian Surgeons this was discovered to be a rarity in Nigeria. One adult Negro developed an acute middle ear infection, from which pneumococcus III was isolated on examination; he rapidly went on to cerebellar abscess in spite of drainage of the mastoid (which appeared reasonably healthy) and treatment with sulphonamides.

Chronic Suppurative Otitis Media: Ear,
nose and throat diseases rank fourth on the list of causes of boarding men home from Nigeria (see Pages 8 - 9) and of these, ten out of twenty-five sent home had chronic suppurative otitis media. It is interesting to notice the relative frequency of the condition amongst other ranks as compared with the Officer class. Of the latter, only one case occurred out of the nine ear, nose and throat cases returned home, whilst chronic aural infection constituted three-fifths of the boarded other ranks' ear, nose and throat diseases.

As with other chronic infections already discussed, there is usually an exacerbation of the complaint soon after the man reaches Nigeria, and the complications resulting on the neglect of adequate treatment appear to be more rapid of onset

than has been noticed in Britain. Though treatment was applied thoroughly and continuously by myself to all the cases seen, half of them eventually had to be returned home for a variety of reasons. Increasing discharge, increasing deafness, vertigo and facial nerve irritation occurred to an extent to render the stay of the patient in the country inadvisable. Granulation tissue was particularly difficult to deal with and two or three operations were undertaken, in each of certain cases treated in the early part of our time in Nigeria, for removal of exuberant granulation tissue in ears which were causing little trouble before the patients left England. Labrynthine irritation was a common finding in similar cases, and deafness, stationary at home, became rapidly worse under West African conditions. Thus, if the case in the European did not respond within a reasonable time to conservative treatment, it was considered whether he should be returned home or, taking into account the time involved often in this journey in 1941-2, whether he should have a radical mastoidectomy at once, and then proceed home or otherwise, depending on the speed of healing. Many cases were treated conservatively and returned to their Units, healed and dry, only to be returned to the Department two or three times, finally to be sent home.

Treatment in the Department each morning by myself, resulted in a large proportion of the ears drying satisfactorily at the time, though many of them returned later. Careful mopping and syringing

if necessary, followed by spirit drops, produced good results. Syringing was recommended for treatment if it were to be continued under less satisfactory conditions. Six radical mastoidectomy cavities in cases operated on at home were seen and cleaned, and found to be quite satisfactory under the prevailing conditions. Most of the seven radical mastoidectomies performed on Europeans were dried in normal time after skin grafting in these cases was instituted. Otherwise, the first two treated without application of skin graft took longer to dry than might have been expected in Britain. The after-treatment of the cavity when the patient left Hospital was even more important than at home, but if it were continued the patient was able to remain in the country. Though treatment was possible thus, and the patient might stay in the colony after operation, it is considered inadvisable that European individuals with chronic active aural infections and certain cases of healed chronic aural infections, and most patients who have had radical operations, should be allowed to be drafted to West Africa, particularly to the Army, where conditions are less satisfactory than for Civilian Europeans.

The bones of the Negro are recognized by the thickened walls of the calvarium, and by the enlargement of the bony protuberances of points of muscle attachment (Walsh and Pool)⁽¹⁾. Thus,

(1) Walsh and Pool. A.M.J. Med.Sc., 196:2:252.

mastoidectomy in the chronic ear is complicated by marked density of bone and the depth of the antrum. In the acute ear the cellular tendency is particularly well marked and extensive. The liability to increased fibrosis and to the formation of keloid in the native is important in the radical operation and the plastic flap should be continued well into the concha to avoid stenosis after operation.

Deafness: Though deafness was not seen more often in Nigeria than amongst a similar number of cases at home, the relative frequency of perception of deafness, especially in men who had spent years in the country, was noted. In fact, most of the senior Officials and Traders appeared to have a mild higher tone deafness not seriously affecting the frequencies concerned with speech, though certain of the older ones who reported complaining of deafness were affected by the encroachment of the defect on the hearing frequencies for speech. Malaria may be associated with a deafness unrelated to the administration of quinine, but rather to the lack of it, permitting subtertian parasites to damage the organ of hearing. Richardson⁽¹⁾ records cases of malaria simulating mastoid disease. He finds that Ménière-like attacks may occur in a similar fashion, also loss of taste, anosmia, and simulation of frontal sinus affections. The continuous assimilation of quinine for prophylaxis of malaria does tend to cause the type of deafness as noted in the senior European Officials⁽²⁾, though a similar but

(1)Castellania & Chalmers. Manual of Tropical Medicine.

(2)Logan Turner. Diseases of Ear, Nose & Throat.

perhaps less marked affection occurs due to the administration of quinine only during attacks of malaria. The more recent method of using mepacrine (atebrin) for prophylaxis may prevent the chronic effects of malarial quinine prophylaxis on the cochlear, but no note of this is available until the use has been continued over some years perhaps.

Acute deafness occurs in most cases of the treatment of malaria with quinine in ordinary doses of ten grains, three times a day for a week to ten days. But the symptom usually subsides with little after-effects soon after the cessation of administration of the large doses. Tinnitus is often more marked than the deafness, and vertigo is noted at times. This effect of quinine results from a hyperaemia of the labyrinth and cochlear (Kirchner)⁽¹⁾ Ménière's disease occurs due to exposure to sun in cases and bromides are effective in its treatment. Recovery occurs on return to Britain. Bromides may also be given with advantage to cases suffering acutely from deafness and tinnitus during a course of quinine.

Three Europeans were diagnosed as having Otosclerosis and it was thought that progression was marked. It was advised thus that they should be returned to England. The threshold of the cochlear's resistance to trauma is lowered in otosclerosis⁽²⁾

(1) Kirchner - quoted Castellani & Chalmers. Manual of Tropical Medicine.

(2) Kobrak. J.L.O. 58 - P.439 - 1943.

so that the many factors in the West African climate and conditions which have already been mentioned will have more effect in this condition, even than in other forms of deafness. Mention may be made of quinine, malaria, debility, nasal obstruction, calcium deficiency, and the excessive action of toxic foci amongst other things which are probably effective in increasing otosclerosis.

Negroes in Africa appear to have otosclerosis rarely, (1) their hearing and vision are good, and labyrinthine lesions of any kind are unusual. Out of the nine cases of natives complaining of deafness, six were perceptive in type, and only three conduction. Cases were mentioned to me of sudden complete deafness in Negroes in Nigeria which appeared to be associated with the administration of intravenous arsenicals. (2) Other causes of this type of deafness were cerebrospinal meningitis which is common in the Colony, and excessive quinine.

Damage to the cochlear in traumatic deafness seems to constitute a contra-indication to the use of quinine in any quantity, and such cases should not be sent to West Africa, our experience of this was limited as no active warfare was seen in Nigeria, and only such cases as had been injured previously were seen, apart from three injured in training.

(1) J.N.Roy. Annals Otol. 1920 - 29:79.

(2) Logan Turner. Diseases of the Ear, Nose & Throat, p.408.

MOUTH.

As the oral affections are closely related to certain ear, nose and throat diseases mention may be made of certain interesting features noted in Nigeria.

Pigmentation of the oral mucous membranes:

Certain coloured people are often seen to have pigmentation extending beyond the true skin into the mucous membrane of the mouth. They are referred to in the vernacular as "blue-gummed people", and, as this type of pigmentation is most often seen when the complexion is very dark, the expression is generally used to supplement the description of an extremely dark skin. Monash⁽¹⁾ described two hundred and twenty Negroes of varying degrees of pigmentation and of different ages and showed the existence of pigmented spots in the oral mucosa in ninety-five per cent. (excluding the new-born), which varied in appearance and location. In the darker subjects these areas are deeper in colour and tend to become confluent, and to form a band encircling the central portion of the gum surface. In very dark people the entire gum surface may be covered with a pigmented plaque. In all cases there is a marked tendency for areas to be symmetrical bilaterally. Microscopically these pigmented areas show a picture identical with that of skin pigmentation. The pigment is found in the deeper basal cell layer, chiefly with a tendency to occupy several cell layers above the basal

(1) Arch. Dermat. and Syph., 26:139:1932.

cell layer in the more deeply pigmented specimens. On the hard palate and on the mucosal surface of the lips pigmentation may be diffuse, resulting in a general darkening of the entire area, or mottled, showing irregularly circular or elliptical areas of varying size. On these surfaces there is also a tendency for the pigmentation to be symmetrical. Pigmentation of the cheeks and soft palate may be diffuse or mottled also. The tongue is unique in that there is no tendency for pigmentation on the dorsum to be symmetrical. Corresponding to paucacity of pigmentation of skin at birth the oral pigmentation is also slight at this time. Normal oral pigmentation is not actually confined to the Negro race, having been described in various races as French,⁽¹⁾ Burmese,⁽²⁾ Roumanian⁽³⁾ and English.⁽⁴⁾

Teeth: An attempt to explain the differences between Negroes and whites in the occurrence amongst them of caries and related conditions, would elicit a discussion of the voluminous literature and multitudinous opinions on the causes of dental disease. Such a review would only show that there is no single factor thus far suggested that will adequately explain all the features of tooth decay. The data concerning Negroes are often quoted to show the importance of

(1) (Lyon Med. 131:153:1922.

(Bull.Soc.franc.de dermat. et Syph.30:363:1923.

(Bull.et Mem.Soc.Med.d.Hop.de Paris.36:297:1912.

(2) J.Trop.Med. 15:117:1912.

(3) Lyon Med. 131:153:1922.

(4) (Clin.J. 8:231:1896.

(Arch.Surg. 7:290:1896.

(Proc.Roy.Soc.Med. 3:9, 1909-10.

(Proc.Roy.Soc.Med. 3:57, 1909-10.

diet, because the fact stands out clearly that those Africans who are free of caries on their native diet will probably develop it when they either entirely or partly discard their customary food and adopt that of white people. But what element native food contains or does not contain that makes it effective in preventing decay is not known. Vitamins of various kinds, bacteria of all sorts, carbohydrates, minerals, and an as yet unknown substance have figured in speculations made.

Part of the difference between Negroes and whites may be inheritable and inborn, because food habits of Negroes and whites in the United States of America are not markedly divergent. These racial differences for dental disease are more marked in childhood when inherited influences are probably more effective. It appears that by the time adult life is attained the racial differences in incidence of dental disease have disappeared, probably because both races have by then been subjected to pernicious influences of modern diets, and the inherited protection of the Negro has been overcome.

Whites show the greatest evolution of the teeth (1). Suk describes a comparative study of Zulus and Prague boys of from six to twenty years, and finds that in Negroes there is a marked precociousness of the eruption of teeth, one Negro boy of thirteen years had thirty-two teeth(2).

(1) (Sullivan. Am. J. Phys. Anthropol. 3:255:1920.
(Schertz. Studien und Forschungen Zur Menschen
und Volkerkunde, Vol.13(Stuttgart 1915).

(2) Suk. Am. J. Phys. Anthropol. 3:429:1920.
6:195:1923.

Staz⁽¹⁾ found that the dental arch in primitive Bantus was superior to urban and European arches, and that in the primitive types the teeth, especially the first molars, had cavities and potential fissures worn down and smooth. He found that the pH of European saliva was greatest, and that natives had good teeth even though they were starved and had avitaminosis. Osborn⁽²⁾ notes that twenty per cent. of decay in Bantu teeth in the kraals rises to fifty per cent. in towns on European diet. These findings correspond with our own in various ear, nose and throat manifestations in natives who are almost immune until they are exposed to civilising influence in the larger towns such as Lagos. The Hospital Dentist in a personal communication and in a publication⁽³⁾ showed the increased incidence and at a younger age of gum recession and alveolar absorption in the Colony. This occurred in natives especially, but it was marked in Europeans. Healing is especially slow in Nigeria and the gum defect may be due to initial traumata with delayed healing and fibrosis. Windell attributed the condition to lack of calcium. Stitt⁽⁴⁾ says there is a notable difference between tropical and non-tropical dental affections, an increase in spirochaetosis of the mouth, a greater virulence and extent of infections,

(1) Staz. S.African J.Med.Sc., 3:1:1928.

(2) J.Dental Research. 16:431:1937.

(3) Windell. Brit.Dental J. 1943.

(4) Stitt. Tropical Diseases.

a delayed response to ordinary medication, an increased susceptibility to post-operative infection and a failure to retain pulpless teeth as useful units of the dental arch. Windell noted a certain amount of dental decay in the native troops and did a lot of dental work on the older native inhabitants of the area. Medical and Sanitary Reports of Nigeria (1938) state that there is a lot of dental caries amongst the native children.

SURGERY IN NIGERIA.

Surgeons who have had considerable clinical experience with Negroes commend them as excellent surgical risks⁽¹⁾. They are stoic in their reaction to pain and discomfiture, do not easily go into shock, and take anaesthesia well, resist infection, and show remarkable powers of recovery. Most coloured peoples live strenuously, both in their work and in their pleasures, reflection of which is in the many severe injuries they receive either as accidental industrial injuries, or as a result of altercations. Some of these injuries are so extensive and serious as to merit an almost hopeless prognosis. Yet many times they recover with ease and remarkably little disablement. The outstanding feature of Negroes as surgical patients is their resistance to infection. Resistance to bacterial invasion, as account of their medical disease shows, is not a general one. When

(1) (Reichenbach. J. Anthropol. Soc. 11:64:1864.
(Deutsche Med. Wehnschr. 22:544:1896.
(Greely. M. Rec. 8:10;1912.

infection does occur it often can be adequately described as a low-grade infection with thick yellow pus and much granulation tissue. But all too often the stamina of the Negro surgical patient is off-set by diseases that seriously increase the risk of surgery. Those diseases which are particularly active in this respect are syphilis, hypertension, heart-disease, renal disease, and tuberculosis. These, at the same time, have a relatively high incidence in the Negro.

The surgery of the ear too, does not show marked difficulty though the slow healing tends to occur in the European is manifest in the radical mastoidectomy cavity unless the precaution of primary skin-grafting is adhered to. The native, after the same operation, shows an increased liability to stenosis of the meatus and a large flap and skin-graft should be used.

Intranasal antrostomy was not found a very useful operation in Nigeria and each case had finally to have a radical antrum operation (Caldwell-Luc). If the Caldwell-Luc operation is undertaken care must be taken as regards infection of the sphenoid and posterior ethmoids, infection in these areas is more liable to lead to post-operative intracranial complications. Convalescence from the resulting debility is difficult in most parts of Nigeria, but adequate facilities for returning the troops to health were found in the hill country of Northern Nigeria. Little surgery had previously been under-

taken in Europeans in the Colony, most of them being returned to Britain, as transport was easy and rapid in the days of peace. The difficulties and length of time taken before, and during, the wartime journey forced us to undertake more than had previously been considered advisable.

CONCLUSIONS:

It would appear obvious for one to anticipate more of certain ear, nose and throat defects in Europeans ill-adapted to the artificial, debilitating life in Nigeria, with its mental stagnation, boredom and disease of many varieties peculiar to the area or the Tropics. This is shown in the nose by: relaxation of the turbinal mucosa with resulting defects in an already narrow nose; hypertrophic rhinitis; nasal obstruction with increased effects of any previously present deflection of the septum; eustachian obstruction and deafness; mouth breathing with laryngitis resulting from lack of nasal infiltration of the infected dust; headaches due to pressure in the nose; exacerbation of chronic infections of nose and sinuses.

The ear shows: increased numbers of cases of otitis externa from causes discussed, and a tendency to chronicity of the lesion; smaller numbers of cases of acute middle ear infections, as coryza and acute nasal infection are less common than at home; prevalence of recurrences of chronic aural infections with increased virulence of these conditions, and greater chance of complications thus; Deafness resulting from malaria and quinine.

The virulence of most forms of chronic sepsis is exaggerated in Nigeria, and toxic foci appear to exert a greater effect than in Great Britain. Symptoms of most conditions tend to be increasingly brought to notice by lack of other

occupations for the mind, and neurasthenia was a common diagnosis.

Surgery in most cases was undertaken in the Colony with ample justification. The increased tendency to staphylococcal infection and pyaemia in Nigeria is noted.

A series of ear, nose and throat examination findings in two hundred native schoolchildren and one hundred native recruits in Nigeria are discussed, and findings recorded. (Fig 11).

	Senegal	Nigeria		
Disease of nose & accessory sinuses.	2,000	571	363	30
Disease of ear.	2,000	786	361	45
Diseases of larynx & pharynx.	2,717	747	113	7
Diseases of larynx & trachea.	247	103	52	6
Epithelioma of nose, throat & mouth.	15	11	4	3
Syphilis of nose, throat & mouth.	15	4	1	3
Venereal hypostrophy.	575	112	47	5
Atrophic rhinitis.	285	57	9	1
Deviated nasal septum.	506	37	100	3
C.O.S.S.	553	103	66	15
A.O.W.S.	80	39	6	17
Otitis externa.	179	37	141	11
Nas. impacted.	147	107	30	2
Mastoiditis.	12	3	18	4

Scheppegrell, A. M., Ann. Otol. & Laryng., 4:309:1934.

(Fig.10).

Comparison of Scheppegrell's statistics with those of Nigeria.(1).

In New Orleans the Negro and European populations from which the Out-Patient Department drew its cases, were in almost equal numbers. A similar state of affairs probably prevailed in Nigeria except for exceptions mentioned in text.

	Scheppegrell.		Nigeria.	
	Whites.	Negroes.	Whites.	Negroes.
Diseases of nose & accessory sinuses.	2,483	571	252	30
Diseases of ear.	3,029	788	364	65
Diseases of fauces & pharynx.	2,717	747	116	5
Diseases of larynx & trachea.	347	108	32	8
Epithelioma of nose, throat & mouth.	16	11	4	4
Syphilis of nose, throat & mouth.	15	4	1	3
Tonsillar hypertrophy.	635	119	97	4
Atrophic rhinitis.	225	55	2	-
Deviated nasal septum.	568	57	100	3
C.O.M.S.	663	108	66	16
A.O.M.S.	69	39	6	13
Otitis externa.	179	37	141	11
Max. impacted.	447	107	40	2
Mastoiditis.	12	3	18	4

Scheppegrell, A. M., Ann. Ophth. & Otol., 4:589:1895.

(Fig.11).

Ear, nose and throat examination of children and recruits in Nigeria.

	200 Schoolchildren. (4-10 yrs).	100 Recruits.
Poor airway.	-	-
Deviated nasal septum.	-	1%
Enlarged turbinates.	6%	7%
Congested mucous membrane.	1%	1%
Nasal discharge.	14%	1%
Adenoids.	2.9%	3%
Congested tonsils.	33%	5%
Moderately enlarged tonsils.	12%	1%
Very large tonsils.	1½%	-
Wax in ears.	21%	4%
O.M.S.	½%	-
Scarred drumheads.	1%	-
Dental caries.	3%	1%
Cervical adenitis.	89%	-
Congested vocal cords.	-	½%
Infantile epiglottitis.	-	3%

- (1) Craig, S.B. J. S.A.M.C. - 75:26:1941.
 (2) Birrell, J.P. J. S.O. - 26:15:1944.
 (3) Neech, E. J. K.S.S.O. - 31:78:1945.

(Fig.12).

	Home		Overseas		Nigeria
	Birrell	Craig	B.N.A.F. Birrell	M.E.F. Reeves	
<u>EAR.</u>					
Cerumen.	19	25	34	52	42
Otitis externa.	112	34	192	73	131
Furuncle of meatus.	6	17	19	-	21
Dermatitis of auricle.	5	-	6	-	2
Osteoma of meatus.	8	-	6	-	3
Foreign bodies.	2	3	3	-	3
Keratosis obturans	1	-	3	-	1
Wound of auricle.	-	-	2	2	2
Sebaceous cyst.	-	2	-	1	-
Haematoma or perichondritis.	1	1	-	2	-
Acute catarrhal otitis media.	17)		17)		
Acute suppurative otitis media.	37) 20)	56	90) 73)	170	19
Chronic catarrhal otitis media.	97	70	43	42	11
Otosclerosis.	-	37	-	11	4
C.S.O.M.-safe	175)		83)		
C.S.O.M.-unsafe	70)245	243	79)162	174	82
Concussion deaf- -ness.	2	-	16	-	3
Haemorrhage of drum.	5	-	9	-	-
Traumatic perforation.	1	-	20	-	3
Traumatic otitis media.	-	-	13	-	1
Ménière's dis- ease.	7	-	5	-	4
Nerve deafness.	10	14	18	13	17
Mixed deafness.	-	-	15	-	3
Simulated deaf- -ness.	3	1	2	2	-
Miscellaneous.	2	-	4	9	31

(1.2.3.)

- (1) Craig, D.H., J. R.A.M.C. - 76:86:1941.
 (2) Birrel, J.F., J.L.O. - 59:16:1944.
 (3) Reeves, B., J. R.A.M.C. - 81:78:1943.

(Fig.12 cont'd).

	Home		Overseas		Nigeria
	Birrell	Craig	B.N.A.F. Birrell	M.E.F. Reeves	
<u>NOSE.</u>					
Epistaxis	11	33	19	-	8
Dermatitis of vestibule.	2	-	7	6	3
Furuncle of vestibule.	-	-	2	3	4
Septal haematoma or abscess.	2	-	1	2	1
Septal perforation.	2	-	-	2	-
Septal ulcer.	-	-	-	16	-
Deviated septum.	63	72	23	27	103
Fractured nose:					
Recent	4	(8	4	(8	(6
Old	8	(-	((
Fractured ethmoid.	2	-	-	-	2
Acute rhinitis.	4	-	3	9	4
Chronic rhinitis.	10	-	5	-	-
Fibrinous rhinitis.	-	-	-	4	-
Hypertrophic rhinitis.	11	8	2	14	54
Atrophic rhinitis.	8	2	11	-	2
Ozaena.	1	-	2	-	-
Rhinitis sicca.	1	-	2	-	-
Allergic rhinitis.	54	-	33	1	23
Acute sinusitis:					
Maxillary	10)	8)	19)	7)	7
Frontal	6)18	49)57	6) 25	36)46	3
Pansinusitis	2)	-)	-)	3)	2
Chronic sinusitis:					
Maxillary	43)		31)	18)	37
Frontal	2)51	83	2) 41	5)23	9
Pansinusitis	6)		8)	-)	4
Polypi (including choanal.)	15	15	2	9	7
Miscellaneous.	2	22	5	10	21

(Fig.12 cont'd).

	Home		Overseas		Nigeria
	Birrell	Craig	B.N.A.F. Birrell	M.E.F. Reeves	
<u>PHARYNX.</u>					
Acute tonsillitis:	3	)	12	26	9
Acute pharyngitis	2	)	5	3	2
Peritonsillar abscess.	1	)102	3	-	1
Chronic tonsillitis.	88	)	47	58	92
Chronic pharyngitis.	6	5	8	-	5
Vincent's infection.	8	-	-	-	3
Glandular fever.	2	-	-	-	1
Syphilis.	1	-	-	1	2
Ulcer of tonsil.	1	-	2	-	-
Diphtheria.	-	-	3	-	-
Keratosis pharyngis.	-	-	-	1	-
Carcinoma nasopharynx.	-	-	1	-	) 3
Sarcoma of tonsil.	-	-	-	1)
Miscellaneous.	1	-	3	1	13

	Home		Overseas		Nigeria
	Birrell	Craig	B.N.A.F. Birrell	M.E.F. Reeves	
<u>LARYNX.</u>					
Acute laryngitis.	3	)	7	39	7
Chronic laryngitis.	4	) 21	7		13
Tuberculous laryngitis.	2	)	1	5	6
Syphilitic laryngitis.	1		2	4	1
Functional aphonia.	3		1	3	1
Papilloma vocal cord.	1		1	1	2
Laryngeal diphtheria.	1		-	-	-
Miscellaneous.	1	1	2	2	7

(Fig.12 cont'd).

	Home		Overseas		Nigeria
	Birrell	Craig	B.N.A.F. Birrell	M.E.F. Reeves	
<u>TRACHEA BRONCHI</u>					
<u>OESOPH.</u>					
Tracheitis.	-	-	1	2	2
Haemoptysis.	4	-	-	-	3
Carcinoma of lung	-	-	-	2	1
Upper & oesopha- geal spasm.	1	-	-	-	2
Forein body in oesophagus.	1	-	-	-	1
Carcinoma of oesophagus.	-	1	-	-	2
Miscellaneous.	-	-	-	2	2
Miscellaneous.	-	-	-	22	21
Negative exam- inations.	33	67	45	94	53

