if the pancreatic juice fails, the quantity of split fat is very low indeed, so that when both biliary and pancreatic secretions are absent the utilization of fat falls almost to zero. He objects to the old words "diarrhoea" and "constipation," and even to our conception of these; the former being only applicable to those cases in which, after a test meal, it is found that the faeces appear in a time shorter than habitual, and contain a smaller proportion of dry substance; and, conversely, constipation should only express that the time is too long and the proportion of dry matter too great. Undoubtedly, great credit should be given to those who undertake these laborious researches in a neglected department of clinical study. The establishment of institutions for clinical research has greatly aided practitioners in obtaining help in the more tedious and complicated investigations called for by modern methods of diagnosis, and there seems no reason why the analysis of faeces should not become more general. In relation to fat digestion especially, the information to be derived from it is of practical value in the diagnosis and treatment of disease.

In one of the series of handbooks published by the firm of J. B. Baillière et Fils, under the collective title of *Les Actualités Médicales*,¹ Dr. RENÉ GAULTIER describes briefly the methods employed in the wards of the Paris hospitals under such masters of clinical method as Professors Dieulafoy and Robin, Drs. Parmentier and Le Noir. All the methods are, as Professor Robin says, not always available in practice, but are useful because they serve to give precision to the value of old symptoms while extending our appreciation of their significance. The procedures followed are clearly described and are generally well known, but too much stress seems to be laid upon the importance of quantitative chemical analyses and too little on simpler means, such as the examination of the state of the fasting stomach. The presence of too much or too little hydrochloric acid in the product of a single test meal is not a fact upon which we can rely with certainty, and even if established by repeated examinations may afford little help in the diagnosis and treatment of a given case. Influenced by Professor Robin's teaching, M. Gaultier exaggerates the importance of the chemical functions of the stomach, and tends to lose sight of the more serious factor in the production of symptoms, its motor power and the free exit of its contents. It is well known that diminished secretion of gastric juice may exist without giving rise to any symptoms at all, while excessive secretion causing pain and pyrosis is rare in the absence of structural changes, such as chronic gastritis, pyloric stenosis, and ulcer. The marvellous results of the operation of gastro-enterostomy prove that once a free exit has been provided for the stomach contents, the whole of the symptoms disappear in spite of the persistence of disordered chemistry. The section devoted to M. Gaultier's special subject, the examination of the faeces, is of exceptional interest and value. It describes in detail the various procedures he recommends, and the text is illustrated by several useful figures of the apparatus he employs. Any one desiring to follow this line of research will find this an easy guide suitable for the use of a beginner.

MEDICAL AND SURGICAL APPLIANCES.

A Portable Cooler of Boiling Water.—Dr. Howard B. Gladstone, Public Vaccinator for Sydenham, etc., writes: It is a matter of common inconvenience that when plain sterilized water, without antiseptics, is wanted in a hurry much time is wasted while the boiling water cools down to a temperature at which it is fit for use. There is risk of contamination if the water is poured from vessel to vessel; whilst if the cooling is attempted by adding cold unboiled water, the resulting liquid is not wholly sterile. I have designed the little apparatus, made by Messrs. Down Brothers, as a means of reducing the temperature of boiling water by 100° F. in a few minutes. It should be of value in cases of *post-partum* haemorrhage to prepare, without delay, a hot douche which can be relied upon as sterile. To prepare a saline fluid for intravenous injection, the necessary number of tablets of sodium chloride (supplied in the case) are to be added to a kettleful of boiling water before it is cooled down. Again, in operations where aseptic lotions are to be preferred, the apparatus will be useful. It is very portable and can easily be carried by a surgeon to an operation in a private house, and will enable him to work there with aseptic lotions. The apparatus consists of a coil of

flexible metal tubing connected at one end with a rubber tube and metal funnel. Into this the boiling water is poured, suitable folding handles enabling it to be held comfortably. At the other end a rubber tube is attached to carry off the cool fluid to douches or other receptacles. A small thermometer is included in the case. When the coil is immersed in a vessel of cold water, with a stream running into it from the

tap, a quart of boiling water is reduced to 110° F. in three minutes. If the coil is immersed in a pail of unchanged water the cooling reduces the temperature to about 120° or 130° F. The contents of the pail must be changed after a quart has run through, as it is necessary that the surrounding fluid should exceed in volume twice that of the fluid passed through the coil. The whole apparatus can be sterilized by boiling. It is packed in a small metal case, which can easily be carried in an instrument bag.

THE DIET OF THE PRECIBICULTURISTS.

By HARRY CAMPBELL, M.D., F.R.C.P.,

Physician, North-West London Hospital and to the Hospital for Diseases of the Nervous System, Welbeck Street.

VI.

THE BUSHMEN.

WE now come to the precibicultural peoples of Africa. They are to be met with only among the Pigmy tribes. The bushmen are a dwarf, moderately prognathic, negroid race, with coppery red skin and hair arranged in tufts on the scalp. Their cranial capacity is about 1,250 c.cm. as against the European 1,500 c.cm. Judged by the European standard they are therefore microcephalic, and according to my system of classification they should be referred to the 12.5 grade of evolution; though, if due allowance be made for their small stature, we ought probably to place them at a higher grade than this. Morally they are greatly superior to their cruel Bantu oppressors, and they are bright and intelligent, possessing a rich oral folk-lore, and in their well-known rock paintings displaying an artistic talent of no mean order.

The Bushmen are a primitive nomad people, living by the hunt and on the uncultivated products of the soil. They live in caves, or rock shelters, or in holes dug out in the sand; or again, in veritable nests made in the Bush, whence their name of *Bosjemans*, or Bushmen, given them by the Boers. More rarely, when from the abundance of game they make a lengthy stay in one district, they build temporary huts consisting of poles covered with branches, rushes, or skins. The latter constitute their only form of garment. For carrying water they employ an ostrich egg covered with netting. Their chief weapons are the spear, which is tipped with bone or flint, and the bow and arrow, the latter being similarly armed. For digging they employ a pointed stick weighted at the top by being thrust through a perforated stone.

Of late years these people have been hunted down by neighbouring tribes and gradually driven into the Kalahari Desert, north of the Orange River, a region which largely consists of "bush"; and though scattered in isolated groups over a large portion of South Africa, it is only here that they can be seen in anything like their original state. They will probably ere long be extinct.

Animal Food.

Animal food enters largely into the dietary of the Bushmen; they appear, indeed, to depend more on it than on vegetable food, and are, therefore, "obliged to know all about the habits and instincts" of animals. The following are among the varieties of animal food they consume: The antelope, zebra, quagga, hyaena, lion, hippopotamus (the liquid fat of

¹ *Technique de l'Exploration du Tube Digestif*. Par le Dr. René Gaultier. Paris: J. B. Baillière et Fils. 1905. (Crown 8vo, pp. 96, Fr. 1.50)

which they drink with much relish), various kinds of small game (for example, hedgehogs), the ostrich and other birds, birds' eggs, fish (fresh-water presumably), lizards, frogs, snakes (after the removal of the venom-bag), locusts, insects, white ants, worms, and grubs. The domesticated dog is occasionally eaten.

Methods of Procuring Animal Food.—The spear and the bow and arrow are employed in the hunt, the arrow point being frequently poisoned (for example, with snake venom mixed with the juice of certain deadly Euphorbiae, which is said to kill even the larger game in a few hours). In stalking the ostrich the hunter dons ostrich feathers and paints his legs in imitation of that bird. They watch the sky for carrion birds, and in this way can find the spot where a lion or other carnivorous animal is devouring its prey, which they are then able to secure.

In their search for game the Bushmen are continually wandering about, and are compelled to live in small parties, so as not to scare away the game; they are, in fact, nomad hunters, and follow large herds of game just as other carnivorous animals do.

Methods of Preparing Animal Food.—Animal food is sometimes eaten raw, and is at best but slightly and hastily cooked. Farini (1886), who journeyed through the Kalahari Desert, saw some Bushmen devouring the raw offal of a sheep; on another occasion he witnessed one of them on his knees licking up the marrow which fell from some bones that were being broken by his companion. The food is cooked either by being put on the fire, or by means of underground ovens.

All kinds of putrid meat are eaten, apparently with impunity. The locust is highly esteemed; the bodies, divested of wings and legs, are mixed with grease, or with the warm blood of the quagga or hyaena, or, again, they are dried in the sun, ground between two stones, and after being mixed with hay baked over a fire.

When their supply of food runs short they will steep an old dried gnu-skin in water and afterwards roast it over a fire, and they allay the pangs of hunger by gnawing a piece of it till their very jaws ache; and we are told that in the last resort they have to be content with tightening the waist-band!

Vegetable Food.

According to Featherman, the Bushmen have a large variety of vegetable foods at their disposal, but I have been unable to obtain as detailed an account of them as in the case of the Australians and Californians.

Roots.—Farini found many different kinds of edible roots in the Kalahari Desert. One of them is "as long as a man's arm and much thicker, full of strong fibres which would make a good rope, and between the fibres a kind of starchy substance, which when cooked tasted very much like arrow-root. When roasted it was not a bad substitute for a potato." On the other hand, Barrow says: "The bulbs of the iris and a few graminiferous roots of a bitter and pungent taste are all the vegetable kingdom affords him. By the search of these the whole surface of the plain near the horde was scratched." The roots are grubbed up by means of a pointed, stone-weighted stick, and, as usual, all the gathering of the vegetable food is done by the women.

Luscious Fruits.—A wild water melon is a favourite food of the Bushmen, who in seasons of plenty grow fat on the oily seeds, scarcely taking the trouble to hunt then. This melon yields two crops annually. They also fatten on the fruit of the giant cream of tartar tree, which they gather in large quantities, and on the anona, which Chapman pronounced to be "the most luscious" fruit he had ever tasted.

Other vegetable foods are: The core of aloes stems, wild garlic, and a brownish-red berry the size of a marble, called "wait-a-bit"; it is bitter and astringent, and apparently too indigestible for the white man. Honey is largely consumed, a nest when found being regarded as the property of the finder. Acacia gum is collected and chewed.

Method of Preparing Vegetable Food.—I have not found any detailed description of the way the Bushmen prepare their vegetable food, but the evidence goes to show that their methods are similar to those adopted by the Californians and Australians. The pulpy acid substance of the cream of tartar tree is converted by cooking into a sort of porridge. They remove the bitterness of the water melon by cooking it in the underground oven; and inasmuch as many of the roots they eat are in the raw state bitter and acrid, we may assume that they understand how to remove objectionable ingredients. The oven they employ for cooking their water melons is of interest as being of a more primitive kind than that employed

for "stone steaming." It consists of a hole dug in the sand under a fire, into this hole the food is placed, and is thus covered with hot ashes.

Quantity of Food.—The Bushmen are capable of consuming enormous quantities of animal food. A. H. Keane mentions an instance of five Bushmen devouring a whole zebra in a couple of hours, and Farini relates how a couple of them consumed an entire hyaena, never ceasing until "they had placed themselves outside the entire carcass." It is not, therefore, surprising that they have, as Herbert Spencer observes, a remarkably large alimentary system, and that they can for days together endure fatigue without tasting food. They are said often to go four or five days without eating. Their ability to do this Hillier associates with the abundant deposit of fat which they often possess—a feature they share with the camel, dromedary and South African sheep, and evidently adapted to meet the exigencies of desert life.

Drink.—The only artificial drink among them of which I have any account is the following: "Having cut the throat of the sheep, they opened the belly to let the blood run among the entrails; then cutting these with a knife, and passing in a quantity of water, they stirred up all together, and drank the nauseous mixture with an appetite which sufficiently showed it to be suited to their taste." (Barrow.) They also drink the fat of the hippopotamus with much relish. The Bushmen appear to use a primitive filter. Featherman describes how the women come to the brink of a stagnant pool and suck up the water through a reed stuck into a perforated ostrich egg tightly packed with grass. The water thus filtered being transferred to gourds (*sic*), and preserved underground for future use. [A second account I have read of this process makes me doubt whether it is a genuine instance of filtering.]

Children are nursed for a long time, but are said from the very first days of life to be fed upon chewed roots, meat and other hard foods.

THE KATTEN (VAALPENS).

An even more primitive race than the lowest Bushmen are the Vaalpens, who are by some supposed to be a cross between the former and other African Nigritoes. They are said to average 4 ft. in height, and their complexion is nearly pitch black. They still survive, in some regions north of the Transvaal, in small groups of thirty or forty, under a patriarch. They dwell in holes, into and out of which they crawl "like burrowing animals," and it is the dirty appearance they thus acquire which has led the Boers to call them Vaalpens. They are a feeble, harmless people—certainly one of the most degraded in the world, occupying a lower position even than the Fuegians. As to their diet, they are the "dogs," or "carrion birds," of the surrounding Bantu peoples, and we read that in return for menial services rendered to the Boers they are thankful for the offal of the game they have helped to skin. The only other fact I have been able to gather concerning their dietary is that "their meals are often of the old and infirm persons of the family circle."

THE PIGMIES OF THE CONGO FOREST.

I have not been able to obtain any detailed information concerning the diet of the remaining pigmy tribes of Africa. The following notes refer to the diet of the Congo pigmies.

Animal Food.—Beasts, birds, and reptiles, white ants, bee grubs, the larvae of certain burrowing beetles, other insects. They are not cannibals. Meat is cooked in ashes. This is said to be the only native method of cooking.

The only domesticated animal is a prick-eared dog.

Vegetable Food.—Many kinds of roots, wild beans, fruits, mushrooms. According to Sir Harry Johnston, they eat their vegetable food raw, and if such is the case, it is a very interesting fact. He, however, states that when in contact with friendly agricultural negroes they borrow earthenware pots from the latter, and boil leaves, roots and beans over a fire. Wild honey is obtained in the forest.

THE BURGANDAE.

These people consist of highly prognathic dwarf pariah tribes found in the forest regions and borderland of the Uganda Protectorate. They subsist on such animals as they can shoot with arrows or trap in the forest, also upon bee grubs and wild honey. They are said to eat their animal food raw.

BIBLIOGRAPHY.

Robert Moffat, *Missionary Labours and Scenes in Southern Africa*, 1842. T. Baines, *Explorations in South-West Africa*, 1864. James Chapman, *Travels in the Interior of South Africa*, 1868. C. J. Andersson, *Notes of Travel in South Africa*, 1875. A. Featherman, *The Social History of the Races of Mankind*.

1881. G. A. Farini, *Through the Kalahari Desert to Lake Ngami and Back*, 1886. A. H. Keane, *Stanford's Compendium, South Africa*, 1895; *Ethnology*, 1896. Rätzl, *History of Mankind*, 1896-8. A. P. Hillier, *South African Studies*, 1900. Sir Harry Johnston, *Natives of the Uganda Protectorate*, 1902. Herbert Spencer, *Principles of Sociology*. Barrow, *Travels in the Interior of South Africa*.

THE CAUSE OF RETURN CASES OF INFECTIOUS DISEASE.

REPORT TO THE METROPOLITAN ASYLUMS BOARD.

THE Metropolitan Asylums Board has issued the report on "return cases" of scarlet fever and diphtheria, by Dr. A. G. R. Cameron, who was appointed to investigate this subject from July 1st, 1901, to July 31st, 1902. The main object of the work has been to ascertain the conditions under which return cases arise, and to discover, if possible, whether the incidence of those cases bears any relation to their period of detention in hospital. The total number of inquiries made during the thirteen months amounted to nearly 900, about 800 being in connexion with return cases of either scarlet fever or diphtheria. The report, which extends to some 190 folio pages, contains a large mass of statistics; it is divided into two parts, the former dealing with scarlet fever and the latter with diphtheria. Dr. Cameron inquired into 688 alleged "infecting cases" of scarlet fever, or 4.1 per cent. of the total number of patients discharged from the Board's hospitals during the period, and found that 46.5 per cent. were, in his view, the cause of return cases. These return cases occurred in all months of the year, but especially from November to April; no close correspondence was found between high infectivity-rates and a short average period of detention in hospital. When the largest number of return cases occurred the infecting cases suffered from mucous discharges after leaving hospital more frequently than during the remaining months. It appears that between the ages of 4 and 10 years patients carry home infection more frequently than at any other age-period, and that return cases contracted in this way have a higher mortality than ordinary cases. Dr. Cameron attributes the infection of return cases to complications, such as nasal discharge, in the patient rather than to failure of disinfection in the home or length or shortness of detention in hospital, and he believes that such complications lead to a recrudescence of infection, though nasal and other discharges may not necessarily be infectious *per se*. He reports that in the majority of instances return cases are due to a delay in the process of elimination of infection in the infecting case. He concludes, therefore, that return cases are due to premature discharge, even though the infecting case may have been detained longer than usual. Though the facts prove that the discharge was premature, yet, as a rule, this could not be foreseen. It is recommended that for patients, particularly those predisposed to mucous discharges, the usual warm baths should not be given immediately before discharge but on the previous evening. Finally he concludes that it is impossible under the present conditions of hospital treatment to avoid the occurrence of return cases, but with more extended means of isolation, combined with asepsis, a reduction in their number would result and the number of complications and superadded diseases might be considerably lessened.

Much the same general conclusions are held by Dr. Cameron to be true in respect of diphtheria. He investigated 87 infecting cases of diphtheria resulting in return cases of the same disease and 55 of scarlet fever resulting in return cases of diphtheria. In 19 at least of the latter, and possibly 37, he considers the alleged infection was the true cause, and of the total 142 infecting cases 30 per cent. appeared to be the cause of the return cases, and these occurred mostly in the winter months. From these figures it is evident that return cases are less common after diphtheria than after scarlet fever, and that a larger proportion of alleged cases are doubtful or proved to be coincidences. A larger proportion of diphtheria return cases are, he considers, not preventable as no abnormal condition is detectable apart from frequent bacteriological examination of patients who may be acting as "carriers."

The value of the report is considerably enhanced by an appendix of observations on the report by the medical superintendents of the Board's Fever Hospitals. In their statement the superintendents make a number of minor criticisms of some of Dr. Cameron's statistics and conclusions, but with many others they find themselves in agreement. They conclude that patients with discharging or inflamed noses are more likely than any other class to cause infection, and that many such cases occur for the first time after leaving hospital, and therefore cannot be foreseen. They think that

late desquamation is not itself evidence of infectivity, and that sometimes scarlet-fever infection is carried by persons free from the disease and its sequelae. They consider that some of the recommendations of the report should be tried experimentally, but with regard to many of the points raised they desire further investigation and more evidence. An interesting short appendix on mixed and cross infection is added, and the superintendents make various suggestions for the better management of convalescents, the establishment of discharge wards, more adequate preparation of patients for discharge, and for the treatment of cases in one hospital as a trial on the separate partition system, in order to obtain complete isolation during the whole period of detention. They also consider that inquiry into the subject of return cases should be continued on lines to be suggested by them. The whole report is a valuable contribution to the question of hospital isolation which is now attracting much attention, and we trust that the Board will act upon the recommendations made.

LIVERPOOL SMALL-POX AND SMALL-POX HOSPITALS.

A SYNOPSIS of part of a report by Dr. Reece, of the Local Government Board, on Liverpool small-pox and small-pox hospitals, particularly in relation to the question of the influence of such hospitals on spread of the disease in the surrounding neighbourhoods, was published in the BRITISH MEDICAL JOURNAL of April 29th. On July 22nd was published a synopsis of observations by Dr. Hope, the medical officer of Liverpool, on Dr. Reece's report. There has now been printed an interdepartmental memorandum by Dr. Reece on Dr. Hope's observations.

In it Dr. Reece points out that before his inquiries had begun Dr. Hope had stated in a report on small-pox in Liverpool, and in tendering evidence in a court of law, that the administration of the hospitals had been successful in preventing spread of the disease from them. An opinion had sometimes been expressed that the Local Government Board should investigate the circumstances of a case in which it was believed that a small-pox hospital in a populous district had done no harm, and the Liverpool epidemic appeared to offer such a case. The first requisite was to get at the facts, and to ascertain in particular whether there had or had not been any excess of incidence of small-pox upon houses around the hospitals when these were in use for small-pox. The result was as stated in Dr. Reece's report, the facts being almost wholly supplied by Liverpool officials. Dr. Reece holds that Dr. Hope has failed to reconcile the facts brought out, with the view that none of the hospitals had exerted an adverse influence.

Dr. Reece next quotes Dr. Hope's ten conclusions, and dismisses two of them to which no reference was made in our previous synopsis. Regarding No. 3, he writes that his report showed the topographical distribution of small-pox invasion in Liverpool as a whole, and in the mile areas round each hospital used for small-pox, and in particular that he showed the *time* incidence of the house invasion, the opening of one or another hospital for acute small-pox being followed by special incidence of the disease in houses in the neighbourhood. Regarding Dr. Hope's seventh conclusion (quoted in our synopsis), Dr. Reece points out that in the quarter-mile area round Priory Road Hospital there were only 85 dwellings, of which 80 were in a cluster near the circumference, and holds that, when the larger and more populous areas round the hospital are considered, excessive incidence of the disease becomes apparent. Dr. Hope's other conclusions are next discussed. Dr. Reece had found as follows:

"1. Inhabited areas within a mile of each of the three Liverpool small-pox hospitals have suffered more severely from small-pox than the city as a whole.

"2. Exceptional incidence of small-pox within these areas has corresponded in point of time with the use of these hospitals for the treatment of acute small-pox cases; and

"3. Broadly speaking, within these hospital areas the dwellings nearer to hospital have sustained a far heavier incidence of small-pox than those further away."

He says that these conclusions are "based solely upon data as to the accuracy of which Dr. Hope and I are completely in accord." Having regard to similar experiences in London and the provinces, he drew the inference that Liverpool supplies a notable example of small-pox hospital influence. Regarding Dr. Hope's views he writes, "Dr. Hope, however, appears to entertain seriously the suggestion that the whole matter