could be seen without the aid of a speculum. The reason assigned for this situation is that it is the part within reach of the finger which, as stated above, is the usual carrier of infection. In most of the cases the lesion has been situated on the septum. In Mendel's¹¹ case a symmetrical chancre occupied each aspect of the septum. The present case is thus exceptional and resembles that of Spencer Watson. The erysipelatous condition of the external nostril, so marked a feature in my case, was present in those reported by Thibierge,¹² Chapuis, Jacobi,¹³ Parker, and David. It is due, as Thibierge points out, to a secondary infection. Chancres on the genitals occasionally, though not so frequently as extragenital chancres, are liable to the same complication. Tenderness of the glands, which is usually absent in syphilitic adenopathy, is due to the same cause. Tenderness of the enlarged glands was a special feature in the cases of Rueda, Bieck,¹⁴ and Collinet. In Rueda's case suppuration of the submaxillary glands actually occurred. Affection of the nasal duct may produce lacrymation, as in Campbell's and Gaucher's cases, or even lead to a lacrymal abscess, as in Nettleship's¹⁵ patient.

The symptoms, so prominent in my patient, may be ill marked, as in Marfan's¹⁶ and Brunon's cases. In one of Garel's¹⁷ cases the intranasal phenomena were so slight and the glandular enlargement so obtrusive that the patient thought she was suffering from mumps. It is exceptional for constitutional disturbances to occur, as in Spencer Watson's case, where high fever and great mental prostration were noted. In Freudenthal's and Campbell's cases the general symptoms were so predominant that the disease was first regarded as influenza. Many of the recorded cases resemble the present one in the co-existence of the primary and secondary lesions when the patient was first seen, so that a correct diagnosis was soon made, but in others the true nature of the lesion was not recognised till the appearance of the roseola some days or weeks later. In Lermoyez's¹⁸ case the lesion was first mistaken for sarcoma, but the subsequent development of a typical roseola led to a correct diagnosis. In this connexion it may be said that the early involvement of the glands and the slight degree of epistaxis indicate syphilis rather than a malignant growth. In a few instances the chancre was regarded as a tertiary lesion till the secondary eruption developed. In the present case the diagnosis was established by the characteristic induration of the lesion, the enlargement of the submaxillary glands, the co-existence of the syphilitic eruption, and the rapidly beneficial effect of mercury. The ubiquity of syphilis combined with the prevalence of picking the nose makes it surprising that intranasal chancres are so rare. There can be little doubt that several cases pass unrecognised. In conclusion it may be said that the existence of a chancre in such an unusual situation is of interest not only from the standpoint of syphilography and rhinology but also from that of internal medicine inasmuch as the latent or misleading character of the initial lesion may throw light on the etiology of subsequent affections, notably tabes and general paralysis.

I am indebted to Dr. J. E. Beggs, medical superintendent of the Grove Hospital, for permission to publish this case.

Tooting.

EXAMINATION OF THE FÆCES.

BY DR. ROBERT BAUMSTARK.

THE examination of intestinal ejections is still a difficulty to the practitioner. It is a well-known fact that the important progress made in the last 20 years in the knowledge of the functions of the stomach is due to the Ewald "test breakfast" and the Riegel "test meals" which are recognised as trustworthy methods. A direct examination of the intestine is much more difficult. Up to now the only means of becoming acquainted with the functional efficiency of the intestine has been by means of testing in the

laboratory. But there are many objections to this method: First, it is complicated and needs too many appliances and thus is useless to the practitioner; further, the residues in the fæces result not only from the food taken but also from the intestinal, liver, and pancreatic secretions, and from intestinal bacteria, which are all liable to individual changes.

To try to form an opinion of the capabilities of the intestine by means of examination of the fæces with *daily changing* food is impossible, for even in healthy individuals there are manifold nutritious elements which are not made use of and which are ejected in varying quantities in the fæces. A special diet must be adhered to and must fulfil the following conditions: 1. It must contain the necessary amount of calories and suitable proportions of the three chief groups of food-stuffs. 2. It must be digestible, taken readily, and agree well, in order that it can even be assimilated by a disordered intestine. 3. Coarse macroscopical remnants must not appear in the fæces. At the same time the consistency of the fæces must not be so fine as to lack the power of stimulating the bowel. 4. It must be easily obtained in any household. These conditions have at last been fulfilled after many years of experiment in a diet devised by Adolph Schmidt. This diet is as follows:—Morning: $\frac{1}{2}$ litre ($\frac{3}{4}$ pint) milk or $\frac{1}{2}$ litre cocoa (made with cocoa powder 20 grammes, sugar 10 grammes, milk 0.1 litre, rest 0.4 litre water) and 50 grammes rusk. Before noon: $\frac{1}{2}$ litre gruel (made with 40 grammes groats, 10 grammes butter, 200 grammes milk, one egg, and 300 grammes water). Noon: 125 grammes minced beef lightly fried (so as to be raw inside) in 20 grammes butter, 190 grammes potatoes mashed with 100 grammes milk, and 10 grammes butter. Afternoon: The same as in the morning. Evening: The same as in the forenoon. Altogether the diet consists of 1½ litres milk, 100 grammes rusk, two eggs, 50 grammes butter, 125 grammes minced beef, 190 grammes potatoes, and 80 grammes oatmeal. This total represents 2234 calories.

In the greater number of cases, especially in the generality of slighter intestinal troubles, there is no difficulty with this diet. In some cases, however, especially in more serious cases, troubles may arise in the form of diarrhoea or constipation; or perhaps the patient cannot satisfy his appetite with this diet; or, again, he may not be able thoroughly to assimilate the diet. It is possible to remedy this latter difficulty by lessening or increasing the quantity of milk. Diarrhoea and constipation often disappear if one continues the diet four or five days instead of three. Diarrhoea often also passes off if instead of giving 1½ litres of milk alone one prescribes less, and in combination with cocoa, gruel, and mashed potatoes, or with the addition of brandy, barley water, or salicylate of soda (0.3 gramme in the daily quantity of 1½ litres.)

The quantity of meat may, if necessary, be a little reduced. It is hereby seen that alterations can be made to a moderately wide extent so as to adjust the diet to each individual. Again, the principal meal of meat and potatoes may be given in the evening instead of at noon. Toast can also be given instead of rusks. It should, however, be borne in mind that the preparation of the meat must be according to the above method—that is, raw in the centre—and there must also be the necessary quantity of carbohydrates. It is therefore not possible according to Schmidt to increase either the quantity of the meat or of the carbohydrates, for that amount has been chosen so that it may be entirely assimilated by the intestine. Schmidt therefore persists with milk, in spite of digestive difficulties. However, according to his calculations in from 5 to 8 per cent. of cases, the end is not attained owing to the irritation caused by the milk.

It has not yet been ascertained why this is so; possibly the sugar of milk is the cause (on account of its great osmotic and aperient properties) as lactic acid fermentation occurs easily and thus causes irritation of the mucous membrane of the intestine. It may be due also to the special conditions produced by the bacterial flora on the milk, so that numerous quantities of aperient toxins are formed. I myself now aim at using less pure milk for the test diet and being guided as much as possible by individual circumstances. When I learn that milk has not formerly agreed with the patient and that in spite of a prescribed milk cure relapses have occurred, I then at the outset reduce to a minimum the quantity of milk used with the gruel, cocoa, and potatoes, and under these conditions cases of disturbance are indeed exceedingly rare.

It is wise to examine the stools carefully before the test

¹¹ Annales de Dermatologie, 1895, p. 210.

¹² Gazette Hebdomadaire, 1894, p. 198.

¹³ Dermatologische Zeitschrift, 1897, p. 407.

¹⁴ Berliner Klinische Wochenschrift, 1897, p. 1078.

¹⁵ Brit. Med. Jour., vol. ii., 1875, p. 365.

¹⁶ Annales de Dermatologie, 1890, p. 449.

¹⁷ Garel: D'Aulnay, loc. cit.; Kohn: New York Medical Journal, 1897, p. 421.

¹⁸ Cf. Moure, Revue de Laryngologie, 1887, p. 385, and Garel, loc. cit.

diet. If these contain irritating matter and mucus the latter under the influence of the test diet generally disappear quickly. The examination of the fæces for remnants of undigested food is only to be started after the second or third motion when one can be certain that they possess the properties of the test diet—namely, an even consistency and a somewhat lighter colour. The more serious cases are best kept in bed and even with milder cases I should recommend as much as possible great quiet. To patients who are treated at home one can supply test-glasses (15 centimetres in height, 8 centimetres in diameter) and so lessen the difficulty of sending the fæces.

The systematic examination of the fresh fæces is (1) macroscopic; (2) microscopic; and (3) chemical.

The macroscopic examination.—This, the most important of all, establishes the consistency, colour, and smell of the fæces. The motion is thoroughly stirred with a wooden spatula and a quantity of the size of a walnut is put in a grater and ground down with a glass pestle with a gradual addition of distilled water to an absolutely fluid mass. When no more solid parts exist pour it on a large black plate. With normal intestinal action nothing but macroscopically recognisable remnants of cellular particles (rusk, gruel, cocoa) of the test diet should be found in the fæces. The following are of importance as pathological food remnants.

1. The remnants of connective tissue and tendons from the minced meat which has been consumed, and these owing to their light yellow colour, their fibrous form, and their firm consistency can be recognised and most easily distinguished from mucus. Where any doubt exists a small filament can be treated with a drop of acetic acid; in the case of connective tissue the filamentous structure vanishes; in the case of mucus it only then becomes visible. Quite isolated small sinewy filaments are to be found sometimes with quite normal digestions but when in great quantity they are always pathological.

2. Remnants of muscle which look like very small brown-coloured splinters of wood. They are soft, become smaller when pressed, and disclose under the microscope muscle structure. In many cases connective tissue and remnants of muscle are to be met with in the same stool.

3. Remnants of potato, sago, and similar transparent grain, which are frequently mistaken for mucus but which can be distinguished by their globular form and their hard consistency; they stand out above the level of the thin, spread out layer of the fæces. Under the microscope the potato cells appear to be either empty or filled with bluish (stained with iodine) coloured grains of starch.

The microscopic examination.—This is chiefly useful for the verification of the results obtained by the macroscopic examination; for example, in the differential diagnosis of connective tissue and mucus shreds. Three microscopic preparations are made, distilled water being added when the ground-up fæces are too hard. The first is simply a small particle placed on a slide and pressed by a cover glass into a thin layer. The second is rubbed up with a little drop of 30 per cent. acetic acid solution and held over a flame until it begins to boil; the third is rubbed up with a little drop of a strong solution of iodine in iodide of potassium (iodide 1, iodide of potassium 2, distilled water 50), and covered.

Under normal intestinal conditions the following should be observed in the preparations. 1. Preparation without addition: muscular fibres (flake-like formations coloured yellow and rounded at the edges with indications here and there of transverse striæ), some scattered small and larger yellow lime salts, light and dark yellow flakes consisting of sebaes of lime, uncoloured (unstained) soaps, single potato cells empty, sparse remnants of chaff from gruel and remnants of cocoa where cocoa was given instead of milk. 2. In the second preparation, when it is placed under the microscope whilst still hot, the larger lime salts and soap flakes are melted to neutral fat drops which after they are cold become solidified into small sebaceous acid flakes. 3. In the third preparation, which is brown-coloured from the iodine, the potato cells now violet (but not blue) and sometimes violet-coloured sporules (*Clostridium butyricum*) are met with.

Pathologically the following may be observed in the three preparations. In No. 1 broken pieces of muscle tissue in larger number with more clearly defined transverse striæ and sharp edges, neutral fat drops, sebaceous acid, and soap needles in such quantity that they form the largest part of the preparation, and an abundant quantity of potato cells with

more or less well-preserved grains of starch. In cold acetic acid preparations there are pathologically such a number of sebaceous acid flocculi that all of the other component parts are in the minority. In the iodine preparation are bluish coloured potato cells, as also scattered remnants of grains of starch, blue or violet sporules or bacterial flora, and oat cells which are yellow coloured from the iodine.

The chemical examination.—This examination, now taken in hand, begins with a determination of the reaction. Normally, the reaction of the fæces is very feebly acid or feebly alkaline and often amphoteric. The test is made by placing a strip of blue and red litmus paper on (not in) a portion of the fæces which has been mixed with distilled water. A marked deviation in one or the other direction is pathological. It would be best after this reaction test to apply the incubator test immediately in order to arrive at the amount of fermentation—that is to say, the amount of decomposable substance which is contained in the fæces. In the lower part of a Strassburg fermentation tube are placed five grammes (of the size of a walnut, less in the case of hard stools) of the stirred-up but undiluted stools. It is then filled with water and closed with the indiarubber stopper in order to avoid air bubbles. The tube standing above the bottom vessel is now removed and filled with tap water; then after turning the bottom vessel downwards it is closed with the indiarubber stopper. The second tube, which has an aperture above, remains empty and serves to take up the water forced out by the rising gases. After this the tube is placed in the incubator for 24 hours at 37° C. For carrying out the sublimate test a small portion of the stools which have been mixed up with distilled water must be mixed with concentrated aqueous solution of sublimate and left standing for 24 hours in a small glass vessel. The normal colouring matter hydrobilirubin colours it red and the fresher the stools the deeper will be the colour. The green colouring of a part of the fæces is pathological; even when only under the microscope green-coloured particles are visible it proves that there is unchanged biliary colouring matter in the fæces. All these examinations described above would be best arranged in succession in the manner stated which with some practice would not occupy more than from 10 to 12 minutes.

I will now touch on another pathological product of the fæces—namely mucus. In many cases of sluggish motion without there being any symptoms of inflammation, a thin mucous coating of the fæces will be observed which causes the hard scybala to appear as if varnished. Many authorities do not regard this as arising from inflammation but look upon it as ejected secretion. But where mucous shreds are seen constantly deposited externally on the scybala and also mixed with them during a lengthy period of observation, the existence of an inflammatory alteration of the mucous membrane may be inferred. The smaller the mucous particles are and the more they are mixed with the fæces so much the higher is the part of the intestine from which they proceed. Their descent from the small intestine can only be assumed if the fæces are liquid and if the mucous flocculi are quite small and contain half-digested cells—that is to say, kernels of cells in their characteristic arrangement. The larger the number of such cells the higher the degree of inflammation. The bilirubin colouring matter in the sublimate test and the presence of bilirubin crystals in the microscopical examination strengthen the assumption of the mucus originating from the small intestine. Mucus in stools more often has origin from the large than from the small intestine.

The diagnostic conclusions to be drawn from the foregoing observations are as follows. The presence of connective-tissue remnants in the test-diet stools points with certainty to a disorder of the digestion, as only the gastric juice is able to dissolve raw connective tissue—i.e., from the centre and not from the well-cooked part of the meat. Achylia or hypochylia would usually be accountable for such a condition. Excessive peristalsis perhaps also plays an important part in some of these cases. Again, in excessive acidity associated with insufficient pepsine secretion (cases which not infrequently occur) the raw tissue meets with unfavourable conditions and appears again in the stools. A very minute examination of the stomach should be carried out in these circumstances. If muscle remnants are found macroscopically, or even in considerable amount microscopically, disturbance of the digestion in the small intestine may be inferred, for the stomach plays only an unimportant part in the dissolving of meat fibre and the digestion of meat does

not take place in the colon. With both connective-tissue and muscle remnants in the stools it may be concluded that both stomach and small intestine are deranged.

With regard to the digestion of fat, it is to be observed that slighter variations in the fatty contents of the normal stool have no diagnostic meaning, for every stool contains fat in the normal fæces to the extent of 23 per cent. of the dry substance. A morbid increase of the fatty contents is proved at the macroscopic examination by the clayey quality of the light-coloured, nearly white fæces, by the very sour reaction, by the copious quantity of the fæces, and by their filmy appearance when rubbed up. Microscopical increase of the sebaceous acid flocculi in the cold acetic acid preparation and neutral fat drops and salts of lime and soap crystals in a native preparation confirm the diagnosis. If the sublimate test shows a complete absence of bile in the stools together with an increase of the fatty contents (in which case icterus also occurs), the cause of the disease is to be sought for in the biliary duct system. If, however, in conjunction with the increase of the fat contents (especially in the form of neutral fat drops in the native preparation) there are signs of muscle tissue simultaneously with the presence of hydrobilirubin and absence of mucus, then the pancreas is the seat of the disease.

In rare cases, where biliary deficiencies and pancreatic diseases are excluded, severe forms of intestinal disease, such as tuberculosis, amyloid disease, or tabes mesenterica may be the cause of the derangement of fat absorption. The digestion of albumin is then likewise disturbed, and as a rule prior to the impairment of fat absorption. Moreover, purely functional disturbances of absorption limited to fats are sometimes observed. The simultaneous appearance, however, of mucus and processes of decomposition are decisive as regards an organic disease of the intestinal wall itself.

A complete absence of red or green colouring in the sublimate test shows absence of bile in the intestine (and icterus exists). If icterus is non-existent, then it is a question of a temporary suspension of the secretion of bile. In the case of brown, fresh stools, absence of red colouring or a muddy colour would point to intestinal decomposition. When green colouring (bilirubin) is macroscopically demonstrated, or if green colouring of separate particles—for example, of muscle tissue—is seen microscopically, it shows too rapid a passage through the colon; if the entire stool is coloured green, then most probably the small intestine is also involved. If there is a simultaneous appearance of small mucous flocculi described above the cause is an inflammation of the mucous membrane of the small intestine.

In order to prove if there is any disturbance in the digestion of carbohydrates it is best to examine the starch particles of the food given in the test diet, chiefly the potato grains. In the potato meal normally there only appear in the fæces some empty violet-coloured potato cells. If under the microscopic and macroscopic examinations a great number of potato cells are to be seen with bluish-coloured starch grains scattered about or lying in their cells, then this shows a diminished digestive power for carbohydrates. This latter condition is frequently confirmed by a light-brown, frothy appearance and an acid reaction of the stools, by a stronger fermentation reaction (fermentation tube), and under the microscope the appearance of granulose sporules or minute fungi. This deficiency in the utilisation of the carbohydrates is regarded as functional disorder of a milder kind and is designated by Schmidt under the name of "fermentative dyspepsia." A negative result of the fermentation test does not exclude fermentative dyspepsia when the above-mentioned microscopic and macroscopic signs of defective digestion of the carbohydrates are present, as the fermentation may have terminated with the formation of acid products without any gas.

The incubator test.—After keeping the small fermentation tube in the incubator at 37° C. very little gas will be formed under normal conditions. If one-third or more of the tube fills with water, that is pathological. It certainly betokens a morbid increase of carbohydrate fermentation if the reaction of the stools now tested once again is found to be strongly acid instead of being only feebly acid as before. It indicates degradation of the albumin when reaction becomes more alkaline. When fermentation exists the fæces usually assume a lighter colour and smell of butyric acid; with decomposition, on the contrary, they become darker and have a very unpleasant smell. In the case of fermentation moreover, the formation of gases takes place more quickly

and more freely, while with decomposition more slowly and more scantily. The signification of fermentation has already been explained above. Excessive decomposition of albumin occurs usually only in cases of severe diseases of the digestive tract—e.g., inflammatory changes of the mucous membrane of the colon, because it is especially the pathological products of the intestinal wall, mucus, serum, pus, which occasion putrefaction, while merely functional disorders of the digestion of albumin seldom give rise to decomposition.

After the details which I have given I do not think it is necessary for me to point out what important diagnostic conclusions are to be derived from these systematic, easy, and quickly executed examinations of the stools under the conditions of the test diet. These conclusions possess also just as great an importance from a therapeutic point of view in giving us a trustworthy basis for successful dieting.

Bad Homburg.

AN ANALYSIS OF THE RESULTS OBTAINED AT THE SIDLAW SANATORIUM

DURING THE TWO YEARS ENDING APRIL 30TH, 1905.

By RONALD CAMPBELL MACFIE, M.A., M.B. ABERD.,
LATE MEDICAL SUPERINTENDENT TO THE SANATORIUM.

THE Sidlaw Sanatorium was built through the generosity of the late Provost Moncur of Dundee for the purpose of treating poor consumptives. During the first year its patients were derived chiefly from the working classes and during the second year chiefly from the poorer middle classes. It is not "a modified mansion house located in the vicinity of a large town, run upon lines of the strictest economy, and upon the medical and nursing side woefully understaffed." On the contrary, it is a well-built, well-equipped institution, erected on a carefully chosen site and specially constructed for the purposes it is intended to fulfil—in fact, in all essentials and details of position and construction it can compare favourably with the leading sanatoriums of Britain, while with regard to diet, the diet is as full and plentiful as at any of the more expensive sanatoriums. The results have therefore definite clinical and statistical value, even though too short a time has elapsed to allow of more than somewhat tentative and provisional figures.

During the year ending April 30th, 1904, 67 patients were discharged from the Sidlaw Sanatorium. Seven of these, for pecuniary and other reasons, stayed for less than a month and need not be further considered. In 24, or 40 per cent., of the remaining 60 cases the disease was arrested; in 20, or 33·3 per cent., there was more or less improvement; and in the remaining 16 cases, or 26·6 per cent., it was stationary or it retrogressed.

TABLE I.—*Showing the Result for the Year 1903-04.*

Patients discharged or who died.	Disease arrested.	Improved.	Stationary or worse.
60	24, or 40%	20, or 33·3%	16, or 26·6%

During the year ending April 30th, 1905, 88 patients were discharged. 11 of these were discharged as non-tuberculous or medically unsuitable. In 41, or 53·3 per cent., of the remaining 77 cases the disease was arrested; in 23, or 30 per cent., there was more or less improvement; and the remaining 13, or 16·7 per cent., remained stationary or retrogressed.

TABLE II.—*Showing the Results for the Year 1904-05.*

Patients discharged or who died.	Disease arrested.	Improved.	Stationary or worse.
77	41, or 53·3%	23, or 30%	13, or 16·7%

TABLE III.—*Showing the Results for the Two Years (1903-05) together.*

Patients discharged or who died.	Disease arrested.	Improved.	Stationary or worse.
137	65, or 47·4%	43, or 31·4%	29, or 20·2%