and pylorospasm, and in such cases, if the ulcer can be caused to heal by medical or surgical treatment, any scarring produced is insufficient to give rise to obstruction.

Sippey has shown that by preventing the accumulation of acid in the stomach during the night these ulcers heal, and a cure can be obtained in most cases without resorting to surgery. At 11 p.m. the stomach is completely emptied by Senoran's evacuator; if not more than two ounces of fluid are present on two consecutive nights, this can be discontinued. If half a pint or more is removed at 11 p.m., the stomach should be evacuated again at 1 a.m. At 11 p.m. atropine sulphate is injected subcutaneously in order to inhibit the further secretion of gastric juice; the largest dose which does not produce unpleasant dryness of the mouth should be given, beginning with gr. $\frac{1}{10}$. At the same time the alkaline powder should be given; and if more than two ounces of fluid were evacuated it should be repeated every two hours through the night. In most cases the continued nocturnal secretion is rapidly controlled by this treatment.

If the patient is constipated the dose of magnesia should be increased, and if the bowels are not opened on two consecutive days an enema should be given. If diarrhoea occurs some magnesia should be replaced by an equivalent amount of bismuth carbonate.

The strict treatment just described should be continued until for three weeks the patient has had no spontaneous pain, no trace of tenderness has been present, no occult blood has been found in the stools, not more than two ounces of fluid have been removed on any one evening, and the x rays show no evidence of active ulceration. The pain and tenderness generally disappear within forty-eight hours; the other signs of healing appear considerably later, the exact time depending upon the size and age of the ulcer and its proximity to the pylorus.

The diet can now be rapidly increased until at the end of a week everything is taken with the exceptions I mentioned in discussing prophylaxis.

Before returning to his ordinary occupation the patient should be given written instructions as to how he is to prevent a recurrence of his ulcer on the lines laid down under prophylaxis. With large and chronic ulcers he should in addition take a small quantity of the alkaline powder as nearly as possible at hourly intervals between meals for at least six months, but in the case of duodenal ulcer a small feed is equally or more efficacious.

SURGICAL TREATMENT.

Everyone must agree that the surgical treatment of gastric and duodenal ulcer is a confession of failure. If the prophylaxis I have spoken about could become universal, or even if ulcers were adequately treated at a sufficiently early stage in their development, operations would only be required for such rare emergencies as the perforation of an ulcer which had previously given few if any signs of its presence. It is not as if a gastro-enterostomy was completely without danger, invariably cured an ulcer, and never gave rise to unpleasant after-effects. I can recall three patients who died as a direct result of a gastro-enterostomy, although all the conditions appeared to be most favourable for success. I have seen a small number both of gastric and duodenal ulcers which have not improved as a result of the operation, or have recurred later, and several surgeons have recorded cases in which cancer has developed in the scar of an ulcer several years after the performance of a gastro-enterostomy. A jejunal ulcer is the most serious sequel; I believe it always heals eventually under the complete neutralization régime I have described. More frequently a certain amount of discomfort after meals, often associated with diarrhoea, which is occasionally very severe, follows the operation, sometimes only after several years of freedom from symptoms. It is true that the worst results follow gastro-enterostomy, when it has been performed for indigestion in spite of no ulcer being found at the operation. Excluding these cases, which all agree should never have been operated upon, a gastro-enterostomy is most likely to be successful when an ulcer is producing definite pyloric obstruction; equally good results follow a gastro-gastrostomy for organic hour-glass contraction. Moynihan has become so convinced that a gastro-enterostomy is unsatisfactory for gastric ulcers not causing obstruction that he now performs a partial gastrectomy instead, simple excision of the ulcer being in his

opinion insufficient. Although this operation or destruction of the base of the ulcer by a cautery, combined, if the ulcer is very large, with a jejunostomy, may occasionally be indicated, the operation is such a serious one that it should never be resorted to until the most thorough and prolonged medical treatment has failed.

Indications for Operation.

There must thus still be some uncertainty as to the exact indications for operation, but at present I would state them as follows:

1. At the earliest moment after a perforation.
 2. For pyloric obstruction without symptoms of active ulceration.
 3. For pyloric obstruction with symptoms of active ulceration, if the x rays still show well marked stasis after ten days of the complete neutralization treatment.
 4. For gastric ulcer causing organic hour-glass contraction.
 5. When the symptoms recur after one or more courses of thorough medical treatment followed by adequate after-treatment. The number of such courses which should be tried depends upon such circumstances as the age, social position, occupation, and place of residence of the patient; thus, the older a patient, the better his social position, the less strenuous his occupation and the less important occasional absences from business, and the warmer and more equable the climate, the less urgent is the necessity for operation.
 6. If severe haemorrhage occurs more than once, especially in patients past middle age, when it probably comes from a sclerotic vessel which cannot contract. An attempt should then be made to excise the ulcer, or, if this is impossible, to ligature the bleeding point; failing this a series of sutures should be tied round the ulcer so as to cut off as much as possible of its blood supply. Whenever possible it is best to wait until the patient has got over the initial collapse following a severe haemorrhage.
 7. When for any reason—such as the persistence of pain or of occult blood in the stools in spite of treatment—it appears possible that a growth is present, the abdomen should be explored, and unless a growth can be excluded with certainty partial gastrectomy should be performed.
- After any operation for gastric or duodenal ulcer the patient should follow exactly the same after-treatment as after medical treatment, or various ill results, which I have already mentioned, may ensue.

In conclusion, I think we may look forward with confidence to a time when not only the medical treatment of gastric and duodenal ulcer will have become so efficient that operations will no longer be required for them, but prophylaxis will be brought into play so early and so adequately that actual ulceration will be regarded as a rare condition which should never be allowed to occur.

An Address

ON

SURPRISES IN DIAGNOSIS.

DELIVERED TO THE ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

BY

EDMUND I. SPRIGGS, M.D., F.R.C.P.

THE late Dr. Gee has recently been quoted as having said: "Medicine has three parts: the first is diagnosis; the second is diagnosis; and the third is diagnosis." Which is an allegory. If we look back on the progress of the art of diagnosis we observe that for centuries able minds had given themselves to the study of symptoms and signs, checking their deductions by the later development of the disorder. In the nineteenth century, to which Gee belonged, the study of morbid anatomy became general, with the result that enormous strides were made in the recognition and classification of diseases. No one can say how much more is to be learned by these methods as time goes on, though we must admit that we cannot hope to excel, if indeed to equal, those who have gone before in acuity of observation and reasoning. The introduction of aseptic surgery led to another great advance in the knowledge of disease by allowing the study of morbid anatomy during life. An exploratory operation is often a most valuable means of diagnosis, though all will agree that,

provided time and the condition of the patient allow, it should follow and not precede other investigations.

But in addition to the study of symptoms, aided as it is by a general knowledge of medicine founded upon normal and morbid anatomy and physiology, various scientific methods, belonging to the laboratory rather than the consulting room, have come into use, by which we may get closer to the knowledge of many disorders at an earlier stage. In some cases facts can be recognized which until recently could be learned only on the operating table; in others conditions can be found during life which were not revealed formerly until after death; and in yet others we can get information, for example, of the functional efficiency of the heart, digestive glands, stomach, and intestines, which neither the surgeon nor the morbid anatomist has ever been able to supply.

The progress of discovery of scientific methods such as may be used in the diagnosis of disease has naturally been faster than the growth of facilities for applying those methods to the needs of the general mass of sick folk. The poor in the large teaching hospitals have been the most fortunately placed, especially as regards the use of bacteriological and chemical methods of diagnosis. Medical work outside hospitals has also had the advantage of the services of excellent clinical laboratories in the great centres of population from which accurate reports can be obtained quickly by letter or telegram. Sanatoriums for special diseases have also long existed on the Continent, and a few in this country; and in many of these laboratory investigations were made either in the sanatorium or in its neighbourhood. It has been my lot to work at a private hospital which is, I suppose, as regards its particular character and range, the first of its kind in Europe, in so far as the physicians are able to follow the investigation of their patients—whether chemical, radiological, bacteriological, or protozoological—under one roof, and to control the food, drink, rest, exercise, and general mode of life during the process. Looking back over seven years the chief impression which remains, after the consciousness of errors and shortcomings of all sorts, is the impression of the constant interest which frequent surprises in diagnosis have given; an interest common, indeed, to all medical work, but shared especially, as I hope to be able to show you, by this particular kind of work.

I propose to relate briefly a few such surprises. The examples of unexpected diagnoses taken are, with one exception, not extraordinary. No attempt has been made to select rare complaints or find cases in which the disease has been thought to be in one part of the body and found in another; such outstanding surprises occur to all of us from time to time. My object is rather to illustrate the working of a routine in which clinical and laboratory methods are used together. Seven out of the eight diseases quoted are common or fairly common. The eighth, diagnosed as sprue, is included because of its special interest.

Hypochlorhydria (Achyilia).

This complaint may give rise to considerable derangement of health, and is, in my experience, seldom diagnosed from the symptoms.

1358. A middle-aged man complained of three months' discomfort in the upper abdomen and lower chest, coming on after food, relieved by application of heat but not by alkalis. Three years ago a diseased appendix had been removed; the gall bladder, duodenum, and stomach were then looked at and appeared healthy. A further operation was now contemplated. Chemical analysis of the gastric contents showed that the patient was the subject of a persistently poor gastric juice. On x-ray examination no evidence of a gross lesion of the stomach or duodenum was obtained. Treatment by dry diet, gastric lavage, acid and pepsin led to disappearance of symptoms.

677. A man, aged 48, after some years of overwork, had for six months felt weight in the epigastrium with regurgitation and loss of appetite. He had consulted distinguished members of our profession, who thought, as, indeed, any physician of experience might think from his story, that he was the subject of hyperacidity and perhaps duodenal ulcer. The analysis of the gastric contents (by Mr. A. J. Leigh, B.Sc.) showed—

	Free HCl.	Total Acidity.	Active Chlorides.
Test breakfast	Trace	3	Per cent. 0.01
Test lunch	Trace	14	0.01

The digestion of fibrin was very slow; it was improved by the addition of 0.04 per cent. HCl. X-ray examination of the alimentary tract showed nothing abnormal except some delay in the ileum. The urine and faeces were normal.

With treatment for hypochlorhydria steady progress was made, and the symptoms disappeared. Six weeks later the active chlorides were 0.03 per cent., a slight improvement. He continued at home the regimen advised, and has remained well. From time to time tests were made, with the following results:

	Free HCl.	Total Acidity.	Active Chlorides.
Three months later	Present	22	Per cent. 0.08
Nine months later	Present	34	0.13
Fifteen months later	Present	40	0.13
Eighteen months later	Present	46	0.18

showing that the gastric juice gradually regained its strength.

The diagnosis of hypochlorhydria must not be made upon one test meal, or even, unless all elements of doubt can be excluded, upon two results. The accidental factors which are most likely to alter the composition of the gastric contents, especially dilution with mucus or inadvertent taking of alkaline medicine, are factors which lessen the acidity of the material tested. Errors in analysis are also likely to tend the same way.

Amoebic Dysentery.

In the following case the diagnosis, though unsuspected, was made at once from the routine examination of faeces for protozoa.

1218. A patient had suffered from diarrhoea for eight years, during which time he had had the advice of several of our most able physicians and surgeons. He had been treated by vaccines, tuberculin, and rectal injections. The appendix and caecum had been removed. He was sent to Duff House by a surgeon for further observation before another operation was undertaken. The routine examination showed that cysts of *Entamoeba histolytica* were present in numbers. The sigmoidoscope showed superficial ulcers. With x rays the colon was seen to have an irregular ragged outline. The diagnosis made was "chronic amoebic dysentery with secondary ulcerative colitis." Under treatment with emetine the cysts disappeared in a month. The colon had suffered much damage during the eight years of illness, and improvement of the general state was slow though definite.

The patient had not lived in the tropics, and that was why the diagnosis of dysentery had not suggested itself to his former advisers, or to us before examination was made.

Sprue.

851. A young middle-aged woman was admitted with a diagnosis of atony of the large bowel, ascribed to autoinfection, and leading to severe attacks of tetany. She had been ill on and off for years and a complete invalid for more than one year. Large motions had been passed since infancy. The average weight of the stools (taken over seven days) in the first weeks of her stay varied from 250 grams (with 83 per cent. of water) to 600 grams a day, the normal weight for a healthy woman of her small build being about 100 grams a day. Ulcers of the mouth and tongue were troublesome. X-ray examination revealed nothing abnormal. The faeces were light and semi-liquid; a chemical examination of them, the patient being upon a fixed diet, showed that absorption of fat and protein was deficient. The following table shows the amount of nitrogen, carbohydrate, and fat in the diet and faeces and the proportion absorbed:

	Grams per Day.		Percentage of Dry Faeces.	Percentage Absorbed.
	In Diet.	In Faeces.		
Nitrogen	13	2	4	85
Carbohydrate	178	2	5	99
Fat	98	20	47	80

Pancreatic disease was suspected, but the pancreatic ferments, trypsin (in faeces) and diastase (in urine), proved to be present in normal proportion. A diagnosis of sprue was then made, although the patient had only once been in the tropics; and some of her symptoms had been present before she made that journey. Appropriate treatment by a meat diet was instituted. In three months the ulceration of the mouth was gone, and there was no tetany. A steady recovery followed, and faecal analysis six months later showed that assimilation had

become normal, the daily weight of faeces being 97 grams, with 74 per cent. water.

	Grams per Day.		Percentage of Dry Faeces.	Percentage Absorbed.
	In Diet.	In Faeces.		
Nitrogen	18	2	7	90
Carbohydrate	237	0.4	1.5	99.8
Fat	131	6	24	95

The average daily weight of stools sank to 90 grams.

Glycosuria.

A gratifying class of case is that in which diabetes is suspected but the glycosuria turns out to be of different type. In these patients there has often been a lesion or operation about the epigastrium, from which, presumably, the pancreas has been affected.

845. A woman over 50 was sent for treatment for glycosuria, but also complained of pain and vomiting. She had had cholecysto-duodenostomy performed for jaundice. The sugar in the urine never exceeded 9 grams a day, with plentiful carbohydrate in the food, and was evidently not the cause of the loss in weight. X-ray examination showed that the stomach did not empty itself and that a constriction of the duodenum was present, for which a further operation became necessary. The symptoms had been masked by the daily use of an opium pill.

92. A man approaching 60, suffering from loss of weight and energy, with glycosuria, was found to be also the subject of anaemia and a hypotonic dropped stomach. Tests showed that the quantity of sugar passed was always small, between 1 and 6 grams per day, and bore no reasonable relation to the carbohydrate in the food.

Date.	Sugar (per Day).	Carbohydrate in Food (per Day).
August 7th	3.1 grams	154 grams.
September 6th	1.0 gram	13 grams (strict diet).
September 8th	6.4 grams	100 grams dextrose and an ordinary diet.
September 9th	2.8 ..	Ordinary diet.

The opinion was given that the glycosuria was not of importance. Six years have passed, during which there has been no restriction of carbohydrate in the food, and the patient remains well.

Such patients have come to us less frequently of late; perhaps because tolerance tests are made more often than they were formerly.

Chronic Appendicitis.

The following case illustrates the value of x-ray examination after a barium and buttermilk meal in the diagnosis of chronic appendicitis:

554. A young man had had ill health at intervals since childhood, including pneumonia, pleurisy, intermittent pyrexia, and "colitis." He was thought to be tuberculous. These illnesses had prevented him from remaining at school. He joined the army, but was invalided out. X rays showed that the appendix filled in its proximal part and showed vigorous contractions. The shadow beyond was dilated with an irregular cupped or V appearance due to barium reaching round the sides of a faecal mass. This part and the base of the appendix were tender.

At operation two inflamed enlargements of the appendix were found. There was no appearance of tuberculosis in the appendix or surrounding peritoneum. The subsequent progress makes it probable that the pyrexial attacks he had suffered for years were due to chronic appendicitis.

Carcinoma Recti.

582. An elderly man was sent for colitis of fifteen months' duration. The routine microscopic examination of the motions showed the presence of pus and blood. With x rays dilated ileal coils were seen and the sigmoid was segmented irregularly. The sigmoidoscope was then used and a growth found 12 cm. from the anus. Surgical aid was sought and a colostomy done, which enabled him to follow his occupation for more than two years.

Mediastinal Growth.

550. An elderly man was sent for treatment for diabetes, his doctor mentioning that he had an irritable cough, which might be due to too much smoking, and had had one or two febrile attacks. On examination some rhonchi were heard at the right base, with diminished breath sounds. Three days later a faint stridor was heard. The x-ray screen showed the presence of a mediastinal growth.

Calculus.

936. An elderly man complained of constipation, piles, frequency of micturition and sometimes discomfort or pain. He had passed blood in the water seven years before and had been x rayed twice and told there was no stone. X-ray examination showed a large stone in the bladder, of which I show you a radiograph on the screen. It was removed with complete relief.

At former x-ray examinations the whole urinary tract had been screened but photographs had been taken of the kidney region only.

In considering such surprises in diagnosis as those related, and many others, I became curious to know how often they occurred; and it seemed that it might be of interest to express by figures the assistance given by laboratory methods in the diagnosis of a series of cases. So far, about 1,500 cases have been admitted, but for the present purpose I have confined myself to an analysis of the last 500, and have made a comparison between the preliminary diagnosis and the diagnosis after investigation. In considering this analysis one or two points must be borne in mind:

First, the patients are not average patients, but are selected, many of them not having been sent to Duff House until after they had been suffering for some years. In a good proportion the medical advisers of the patients had taken them for consultation to various physicians and surgeons. We may fairly assume that in most of these cases considerable skill and experience had been brought to bear upon the diagnosis of the condition, so far as that can be made from the symptoms, signs, and history. In many cases also certain investigations, such as x-ray examinations, had been made before admission. Nearly two-thirds of the cases (62 per cent.) were abdominal in type.

The second point which I wish to make clear is that in the following series I am not comparing the diagnosis before admission with the diagnosis made after admission. The comparison lies between the first diagnosis made by us upon the history, symptoms, and physical signs, with the valuable help given by the patient's medical adviser or advisers, and the second diagnosis made after such scientific investigation as seemed desirable had been carried out. On admission the patient's history is taken, his symptoms are noted down, and a physical examination made. It is from this information that what I call the preliminary diagnosis is noted. I need hardly say that in most cases it corresponds with the opinion expressed by the patient's medical man in his letter about the case. After investigation the case is reviewed again, and then is made what is called in the following classification the second diagnosis.

The third point is sufficiently obvious. It is that when I speak of the routine examination I do not mean that every patient is subjected to the same routine. The examinations made are those which appear to be directed to the symptoms complained of. The more general ones are chemical and microscopical examination of urine and faeces, including examination for bacteria and protozoa, of gastric contents, and sputum if present, special examination of nose, throat, and rectum, x-ray screening of the chest, photographing of the abdomen for opacities, and examination after a barium meal. In cases of deficient absorption, particularly suspected pancreatic disease, a valuable test is the analysis of the total excreta upon a fixed diet for a period of three days.

Sources of Error.

Fourthly, we do not, of course, assume that the second diagnosis is final and comprehensive. Although in most instances the development of the case or an operation showed that it was near to the truth, there was a proportion of errors and inaccuracies, and of these I shall speak in discussing the various classes in which the cases are ranged. There are doubtless also other errors, so far undiscovered or not known to us.

CLASS I.

In the 500 cases, 53 were of diabetes, in which the diagnosis itself offered no difficulty, though the determination of the kind of case and the appropriate treatment calls for prolonged daily dietetic and chemical observations; 2 others were thought to be diabetes but proved to be a different form of glycosuria, and are not included. Of the

53 diabetic cases, in 48 there was no unexpected complication. In 5 others were found: in 2 heart disease, one Bright's disease, one a large abscess in the leg, and one tobacco poisoning.

CLASS II.

In 143 cases the diagnosis made after investigation coincided in all important respects with the first diagnosis made on the history, symptoms, and physical signs. If we add to these 143 the 53 cases in Class I we find that in 196 cases—namely, 39 per cent. of the whole—the preliminary diagnosis, so far as we were able to test it, was correct.

CLASS III.

In another large class the second diagnosis confirmed the first one, but some material and important point was added by the investigation. For example, a case diagnosed as gastric ulcer found to have a severe constriction of the stomach, a case of ulcerative colitis found to have a cancer of the sigmoid, a case of obesity found also to be suffering from malaria, would be put in Class III. In this class there were 96 cases, made up as follows: In 10, in addition to the condition diagnosed, an affection of the appendix was present, confirmed by operation in 5. In 5 others the presence of gall stones was detected. In 5 the diagnosis was corrected as to the position of an ulcer, a supposed duodenal ulcer being found to be gastric or vice versa. The other findings were: Hyperchlorhydria, 8 cases; hypochlorhydria, 5 cases; amoebic dysentery, adhesions of the bowels, 4 cases; constriction of stomach (verified by operation), gastric ulcer, duodenal adhesion, constipation, alcoholism, over-smoking, nervous exhaustion, 3 each. There were also 3 cases in which intestinal stasis had been diagnosed, but in which the delay proved to be rectal only. Cancer of the bowel, cancer of the stomach, anaemia, ulcerative colitis, 2 cases each; diabetes, constriction of the oesophagus, deformity of stomach, constriction of the colon, adhesions about the gall bladder, colitis, sigmoiditis, *fistula in ano*, sprue, renal calculus, pyelitis, bacilluria, paratyphoid carrier, septic tonsils, deficient teeth, pyorrhoea, heart disease, fibroid lung, bronchitis, pleuritic effusion, climacteric, post-influenzal toxæmia, malaria, 1 each. Diverticula of the intestine were also found in several cases, but did not seem to be associated with symptoms.

CLASS IV.

Is really a subclass of Class III. It contains 83 cases admitted with a diagnosis of one of two or more gastro-intestinal lesions—that is to say, the case was regarded as probable appendix, or duodenum; or gastric or duodenal ulcer; or ulcer or gall stones, without specifying which; and it was desired to ascertain, if possible, whether such a lesion were present, and if so where it lay. In 74 of the 83 the diagnosis was justified, evidence of lesion being found. The second diagnosis was as follows: Duodenal ulcer 16 cases (9 operations); chronic appendicitis 30 cases (22 operations); gastric ulcer 7 cases (2 operations); growth of bowel or stomach 5 cases (2 operations); ileal bands or adhesions 4 cases (2 operations); severe constriction of bowel or stomach 3 cases (3 operations); lesion of gall bladder 3 cases; retrocaecal appendix 2 cases (1 operation); deformity of duodenum, cancer of liver, adhesions after operation, and pancreatic disease—1 each. In 9 cases no mechanical lesion was found; 2 were the subjects of hyperchlorhydria, 2 of achylia, and in 5 no disease of importance was discovered.

CLASS V.

Next is a small class of 18 cases of patients seeking relief after gastro-jejunostomy. In 16 of these evidence of some abnormality in the working of the stoma or a lesion in the neighbourhood was found; 6 of these have so far been operated upon again with excellent results; in 2 the stoma was working well and no mechanical abnormality was found.

CLASS VI.

I come now to a class in which the second diagnosis differed materially from the first, having neither been

mentioned by the medical adviser of the patient nor diagnosed by ourselves in our preliminary examination of the case. In this class there were 96 patients, and the second diagnoses were as follows: Chronic appendicitis 16 cases (5 operations so far); achylia 9 cases; duodenal ulcer, gastric ulcer, heart disease—4 each. There were also 4 cases in which intestinal stasis had been diagnosed but was not found present. Bronchiectasis, tobacco poisoning, caseous masses in the abdomen, phthisis, renal calculus, mediastinal growth, neurosis—3 each. Uterine myomata, prostatitis, hyperpiesis, hyperchlorhydria, colitis—2 each; amoebic dysentery, fibroid lung, bronchitis, anaemia, constriction of duodenum, growth of the bowel, adhesions of the bowel, growth of the stomach, volvulus, atonic stomach, enteroptosis, pancreatitis, gall stones, cholecystitis, constipation, sprue, uterine retroflexion, lesion in sphenoidal cell—1 each.

It will be noticed that cases have been included in this group—phthisis, bronchitis, fibroid lung—in which the diagnoses may have been made by physical examination. These were patients in whom either a lesion which had not been detected was found during continued observation, or in whom the effects produced had been ascribed to some other cause which was not found to be present.

I have also added to this class 5 cases in which no first diagnosis, except that of a symptom, was made. Two complained of headaches: one was found to have chronic appendicitis, and the headache was relieved by removal of the appendix; the second was found to be suffering from an error of refraction and hyperchlorhydria. A third patient complained of irregular mild indigestion, and was found to be the subject of constipation and hyperchlorhydria. The fourth complained of headaches and constipation, and was taking excess of tobacco; and the fifth complained of palpitation, and was the subject of anaemia and basal bronchitis.

CLASS VII.

In this class are three cases in which no diagnosis was made and the examinations were negative.

CLASS VIII.

The last class consists of 8 cases in which errors in diagnosis were made. In 4 cases the second diagnosis was frankly wrong. In one of them a shadow was diagnosed as a renal calculus, which proved to be a gall stone. A second diagnosed as splenic anaemia proved to be malignant disease. In another the diagnosis was made of a retrocaecal appendix and deformity of the duodenum: the appendix was retrocaecal and diseased, but no lesion of the duodenum was found. In a fourth a diseased appendix was diagnosed and a lesion of the stomach; cancer of the stomach was present, but the appendix was healthy.

In a fifth case the appendix, which lay deeply in the pelvis, filled in part only and was tender, and was thought to be abnormal; at the operation it was reported healthy and the symptoms ascribed to ptosis of the caecum. The case is not, however, conclusive, as no microscopical examination of the appendix was made. We have repeatedly found small lesions of the mucosa causing symptoms of appendicitis which are not detected by external examination of the appendix.

In the remaining three cases, although the diagnosis made was correct so far as it went, something important was missed. In one chronic appendicitis was diagnosed, but gall stones were also present and had not been detected. In another cancer of the stomach was diagnosed successfully, gall stones again being missed. In a third chronic appendicitis was diagnosed and was present, but a tumour of the pancreas had not been detected, although the surgeon's attention was directed by us to that region because an unusual deformity of the duodenum, which we could not explain, was caused by the tumour. I show you the radiograph on the screen.

In palliation of these errors it may be said that in every one of the patients in this class, with the doubtful exception of the fifth case, the operation advised was necessary.

The following table summarizes the figures which have been quoted.

Summary of Statistics.

		No. of Cases.	Per cent.
Class I ...	Diabetes	53	10.6
Class II ...	First diagnosis confirmed	143	28.6
Class III ...	First diagnosis confirmed with addition	96	19.2
Class IV ...	(a) First diagnosis confirmed with differentiation (b) First diagnosis not confirmed	74 9	14.8 1.8
Class V ...	Gastro-jejunostomy	18	3.6
Class VI ...	Second diagnosis differing materially from the first	96	19.2
Class VII ...	No diagnosis	3	0.6
Class VIII...	Errors in second diagnosis	8	1.6
		500	100.0

It has probably occurred to my readers that the various classes into which I have divided the cases run into one another and that the boundary line must often have been indefinite. This was so, and on that account the actual figures must not be taken too seriously. If there has been bias in the process of classifying I have tried to direct it towards the swelling of Class II—cases in which the first diagnosis was confirmed—and Classes III and IV *a*—in which the diagnosis was added to or made more accurate, rather than towards Class VI, in which the diagnosis was altered.

In the following table some of the classes are thrown together to obtain a general view.

General Classification.

		No. of Cases.	Per cent.
Class I } Class II }	First diagnosis confirmed	196	39.2—40
Class III } Class IV <i>a</i> }	First diagnosis confirmed with important addition or differentiation	170	34.0
Class VI } Class IV <i>b</i> }	Diagnosis altered after examination	105	21.0

Therefore, in 40 per cent the diagnosis was confirmed, and in 55 per cent. it was modified or altered.

We may summarize the figures by the statement that out of 500 consecutive cases of varying nature, of which two-thirds were abdominal cases, the first diagnosis made on the history, symptoms and signs was confirmed by appropriate laboratory examinations and tests in 40 per cent. of the cases, was materially added to or modified in 34 per cent., and was altered in 21 per cent.

It appears, therefore, that in over half of the cases a material advance was made in diagnosis by the methods of investigation used.

We must never forget, ladies and gentlemen, that the ultimate unit is the patient and not the case. No objective investigation will ever enable us to do without personal observation. A laboratory report may be the corner-stone of the diagnosis, but it cannot of itself be the diagnosis. For example, a man may harbour the germ of an infective disease or may have a stone in his kidney whilst his ill health is due to another complaint or condition altogether. The doctor must observe and appraise the patient himself, his symptoms, signs, temperament and circumstances, using also all other means that the growth of knowledge has given.

[The address was illustrated by lantern slides.]

CONCLUSIONS.

1. The first need in diagnosis is the careful study of the history, symptoms, signs, and general condition of the individual patient. By such means an accurate diagnosis was made in 40 per cent. of 500 patients.

2. In a large proportion of cases, especially those in which the functions of secretion, nutrition and excretion are affected, or in which infections, calculi or growths are present, the routine use of scientific methods of investiga-

tion is an invaluable aid. In over half of the series of 500 cases the preliminary clinical diagnosis was modified or changed after routine investigations had been made.

3. Facilities for such examinations are at present widely needed, especially for folk of moderate means as compared with those who are treated in public hospitals and with the well-to-do.

4. For want of such investigations large numbers of patients are given advice and treatment which is not the best suited to their complaints, hundreds of unnecessary operations are done, and hundreds of operations that ought to be done are left undone.

RESULTS OF THE PEPTONE TREATMENT OF ASTHMA.

WITH A NOTE ON THE TREATMENT IN CERTAIN PATHOLOGICALLY ALLIED CONDITIONS.

BY

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In previous communications¹ the peptone* treatment of asthma was described in detail, and it may now be profitable to consider the extended results. These are based on a fairly large number of cases, all of which received treatment over a year ago. It was formerly pointed out, *inter alia*, that certain types of cases were amenable to the treatment; that the method of immunizing depended on the type of case; that no reaction appreciable to the patient should follow the injection (intravenous); and that the latter should be made slowly.

The treatment has been instructive in respect of the grouping of asthmatical cases. Two main groups occur which show no tendency to pass into each other. One group comprises such as quickly respond to the treatment, and the effect is more or less lasting, the recurrences being infrequent and milder in character. The other group is resistant, and is subdivisible into such as are totally resistant and those in which, by careful immunization, the disease may be largely overcome.

Group 1.

The first group presents as a rule most of the following characteristics: General good health, little family predisposition, limited duration of the disease (though a variable factor), regularity in recurrence of attacks, freedom from bronchitis and emphysema. This group is illustrated by such cases as the following:

Male, aged 22. Has suffered for four years. Attacks occur regularly every night during winter and spring; less frequent in summer. They last from one to three hours, and some relief is obtained by burning asthma powder. Is quite well in the daytime. After seven injections the attacks began to yield and ceased entirely after the tenth. The patient remained quite free of asthma for about a year, when he returned desirous of having some treatment as a prophylactic for the winter months. There has been no return of the asthma.

The relief, however, is not usually as complete as this. More frequently the history is somewhat as follows:

Female, aged 37. Asthma four and a half years; worse in summer. Is disturbed practically every night by slight attacks, for which she burns the usual powders, but, in addition, about every three weeks she suffers a bad attack which prostrates her one or two days. The response to treatment was very rapid, she soon began to have good nights, and could exert herself without any respiratory discomfort. After eleven injections she remained quite free for five months, when the disease returned in a milder form. Another short course of treatment was given, and during the next year she only had three slight attacks.

Such cases might be multiplied almost indefinitely. The treatment is simple and the results very gratifying. The only trouble encountered is the taking of "colds," to which our population is doomed during the greater part of the year. This is often a most distressing factor, and one can only wait and resume.

Occasionally cases are encountered which, from the

* Although it is the proteose fraction of the peptone of commerce which is the active ingredient, I have retained the term "peptone," as it has not yet been proved that the peptone fraction is without any effect.