5. *Sutton and District Medical Society.*

A Meeting will be held at the Greyhound Hotel, Carshalton, at 8.45 p.m. sharp, on Friday, April 8, when Dr. T. H. Whittington will speak on "Cold in the Eye."

A Clinical Meeting will be held on April 22.

6. *Torquay and District Medical Society.*

A Clinical Meeting will be held at the Newton Abbot Hospital on April 7 at 4.30 p.m. Tea will be served at 4 p.m.

A Meeting will be held at the Torbay Hospital, April 21, at 8.30 p.m., when Dr. A. H. Douthwaite will speak on "Treatment of Sciatica, with Special Reference to Manipulative Treatment." Coffee will be served at 8.15 p.m.

7. *York Medical Society.*

A Meeting will be held on Saturday, April 2, at 8.30 p.m., when Dr. C. W. Mackenzie will speak.

A Clinical Meeting will be held at the York County Hospital on Wednesday, April 13, at 3 p.m.

SOME IMPRESSIONS OF THE MAYO CLINIC.

BY N. HAMILTON FAIRLEY, O.B.E., M.D., D.Sc., F.R.C.P.

VISUALIZE a country town, with a population of approximately 20,000 people, built round a magnificent central clinic, and a series of modern general and special hospitals possessing a staff of over 500 selected doctors and 1,500 nurses and technicians, and one gets some idea of the organized activity concentrated in this unique surgical and medical centre where approximately 20,000 cases are operated on annually. While its clientèle is mainly drawn from mid-west farming communities, patients come from all parts of the United States, from Canada, South America and numerous other countries as well.

HISTORY.

The Mayo Clinic is essentially a development of the present century. In 1881, Dr. William Worrell Mayo¹ and his two sons, William James and Charles Horace Mayo, began to practise medicine as a family group in Rochester, Minnesota, their work being centred in St. Mary's Hospital, and for many years they ran a well-organized and progressively expanding surgical practice. It was, however, not until 1901, that the new era of scientific organization began. Dr. H. L. Plummer then joined the Clinic and laboratory developments rapidly followed. In 1907 a library and editorial department were established and in 1912 the medical block, which has recently been largely replaced by the new clinic building, was opened. The educational work of the Clinic in 1915 received a great stimulus by the formation of the Mayo Foundation and its affiliation with the University of Minnesota, thus making available the entire clinical material of the Clinic for medical education and research.

¹ William Worrell Mayo was born in 1819 near Manchester and was educated at Owens College, now part of the Manchester University, being trained as a physicist and chemist under John Dalton. In 1845 he went to New York and nine years later graduated M.D. at the University of Missouri; he did not start practice at Rochester until 1863. ("Sketch of the History of the Mayo Clinic and Mayo Foundation." W. B. Saunders and Co. Philadelphia. 1926. Pp. 1—185).

For many years the policy of the Clinic has been to select full-time physicians and surgeons to carry on general work and to develop special fields. Positions on the permanent staff have naturally been limited, but the establishment of a large number of appointees designated "Fellows or special students of the Mayo Foundation" for periods of two to three years has afforded excellent scope for specialization in surgery for those fortunate enough to secure these appointments, which incidentally are by no means limited to American graduates. From the Foundation the members of the permanent staff are largely recruited.

LAY-OUT OF THE CLINIC.

The new Clinic, fourteen stories in height, was completed in 1929 and is a magnificently equipped building corresponding in function to the out-patient department of a general hospital. Here patients are registered, given a number, and undergo a general clinical examination, subsequently being referred to medical or surgical specialists located on the different floors, and to X-ray and laboratory departments. In any obscure condition a general consultation of different doctors dealing with the case takes place. When suitable for admission patients are sent to St. Mary's Hospital, founded in 1889 by the Sisters of St. Francis, or to the Colonial, Kahler, Worrell and other special hospitals run by the Kahler corporation. St. Mary's Hospital itself is situated a mile from the Clinic, and with its 1,600 beds constitutes the largest surgical hospital in the United States. It has a suite of eleven operating theatres which are generally worked in pairs and contain large galleries for visitors, permitting a good view of operations.

Excellent facilities are afforded medical visitors for seeing the work of the Clinic, and a daily list is published of operations, medical clinics and lectures open for general attendance. Individual members of the Clinic may be interviewed by special appointment.

THE OPERATING THEATRE.

Morning operations at the different hospitals are scheduled from 8 a.m. Anæsthetics are administered by qualified nurses who have undergone a special and prolonged training in anæsthetics. Nembutol and morphia and atropine are being now given shortly before the patient goes to the theatre, and ethylene, ether or nitrous oxide and oxygen are favoured as general anæsthetics. Local, spinal, and sacral anæsthesia are employed in certain cases. Surgeons like Judd, Balfour and others have two adjacent theatres running concurrently, with a separate staff of surgical assistants and nurses in each. In abdominal cases the incision has generally been made by the time the surgeon takes over, and when the intra-abdominal portion of the operation is finished he crosses to the adjacent theatre, leaving his assistant to finish it. Large incisions, 8 in. or more in length, permitting a wide exposure, are made and absolute hæmostasis is insisted on. Before operation the case history is reviewed for the benefit of medical visitors, and the X-ray findings are presented by the roentgenologist responsible for the case who is invariably present at every operation. A pathologist is also in attendance, and immediately a specimen is removed it is examined macroscopically, frozen sections are cut, and a report is generally available within three minutes. In this way the clinical and X-ray diagnoses are continuously checked up with the pathological findings and the visitor has an opportunity of estimating the high standard of diagnostic accuracy attained in gastro-intestinal as indeed in all other branches of abdominal surgery.

PATHOLOGY AND EXPERIMENTAL PHYSIOLOGY.

A distinctive feature of the Clinic is the weekly pathological meeting attended by the whole staff where there is a full and adequate exposure of all post-mortem material collected during the previous week. On such occasions the individual surgeon and physician is liable to be called to the bar of the pathologist to answer for his sins of omission and commission, and frank criticisms are made. They are undoubtedly the liveliest and most illuminating pathological discussions I have anywhere attended, and it is regrettable that meetings of this type appear feasible only in institutes with a full-time salaried staff.

Clinical pathology in its bacteriological, parasitological, hæmatological and biochemical aspects is excellently organized, and practically the whole of the heavy routine work is performed by female technicians, leaving the heads of departments time for other research.

No impression of the Mayo Clinic would be complete without reference to its experimental farm under the directorship of Mann, whose classical researches on the physiology of the liver are so well known. Situated in undulating country, some three miles out of Rochester, it affords facilities not only for Mann's staff but also for those clinicians in the Clinic itself who desire to investigate experimentally on animals problems arising at the bed-side. In this way the more scientific aspects of medicine are fostered under the control and guidance of a master physiologist.

X-RAY WORK.

Attention has been already directed to the continuous correlation of the X-ray diagnosis and operative findings, and this more than any other factor has led to the very high standard of proficiency attained. Radiological diagnostic criteria are constantly being weighed in the balance, and if found wanting are ruthlessly discarded. Thus the diagnosis of appendicitis by X-rays was found so inaccurate that the method has been entirely abandoned. In the diagnosis of œsophageal, gastric and duodenal lesions, fluoroscopy is alone regarded as important, plates being made for record purposes only. With the barium enema in colonic disease both methods are employed. Intravenous cholecystography is no longer fashionable owing to a too high incidence of untoward effects, including local thromboses and toxic features. Now the oral method, which is free from these risks, is adopted, the intravenous route being reserved for those exceptional cases where absorption is defective.

TEAM WORK.

The excellent follow-up system by which the Clinic continues to keep in touch with its patients, and the large number of cases which pass through the hands of a limited number of surgical specialists, combine to make a statistical approach to any inquiry feasible. When the time arrives to assess the value of any new surgical operation case records are analysed and questionnaires are sent out, the results being dealt with by a special staff trained in statistical methods. In this way figures are constantly available, by which the value of any given surgical innovation can be impartially determined. For example, the superiority of a rapid dissection of the tonsils under local anæsthesia in lowering the death-rate and preventing pulmonary complications has been

proved statistically; in consequence, general anæsthesia finds very little place in tonsillectomy at Rochester.

Much of the Clinic's success, as well as the progressive decrease in the operative mortality-rate which its surgeons have attained, has been due to continuous co-operation of the surgeon with the physician, skiagraphist, and clinical pathologist from the time the patient enters the Clinic until his discharge. Special procedures have proved of great value, namely, a general clinical investigation irrespective of what the patient may complain, a judicious selection of cases on the basis of their suitability to stand operative interference and careful pre-operative preparation and post-operative care of unfit patients in order to increase their chances of recovery. Certain of these principles may be briefly illustrated by reference to the surgical practice of the Clinic. For example in duodenal ulcer of long standing—apart from absolute indications—evidence has to be forthcoming that repeated attempts at medical treatment have failed to relieve the condition before the surgeon will operate. The Clinic dictum is that the patient must earn his operation, and when the surgeon does operate his surgery is conservative. The type of operation is never stereotyped, the one selected being that best adapted to the particular pathological condition observed on laparotomy; in addition, the operation is so planned that should recurrence occur further operative intervention is not precluded. Gastrectomy is thus a last resort. In gastric carcinoma every case considered operable by X-rays is explored in the absence of clinical evidence of metastases, but not before bed-rest, diet, gastric lavage, and possibly blood-transfusion have placed the patient in a better position to stand his operation.

In the post-operative treatment of major gastro-intestinal lesions morphia is given in much larger quantities than is customary in this country, and all food and fluid are withheld by mouth for three to four days, the fluid balance being maintained by 2,000 c.c. of saline or 1—5 per cent. glucose given daily by proctolysis and, if necessary, by the subcutaneous and intravenous routes as well. Gastric retention is treated by the early and unrestricted use of the stomach tube, and considerable importance is attached to a fall in the blood chlorides, especially if associated with a rising blood urea and diminished urinary output. Under these circumstances chlorides are administered by all routes, so as to avoid the alkalosis known to be associated with high intestinal obstruction and duodenal intoxication.

Where such an enormous mass of surgical material is dealt with, pulmonary embolism and pneumonia must necessarily prove serious factors in the post-operative mortality rate, and every effort is made to avoid them. Emphasis is laid on the danger of splinting the abdomen and lower ribs by tight bandaging, and, to avoid this, laterally placed strips of adhesive plaster are substituted to keep the dressings in place. While pre-operative colds are an absolute contra-indication to all surgical procedure, post-operative coughs are taken very seriously. In any doubtful case the patient is put in Fowler's position, deep breathing is practised, fresh air, a cool room (55° F.) and a steam kettle are advocated, and an oxygen tent is employed if thought advisable.

Another feature which impresses one is the short time patients are kept in bed. Thus after a simple appendicectomy employing McBurney's incision, the patient is allowed up on the fifth day and is out by the ninth day; with a para-rectal incision the period is 10 and 14 days respectively. In gastric operations, like pyloroplasty and gastro-enterostomy, the patient is up on the twelfth and out by the fourteenth day.

In fact the patient is put on his feet as soon as possible, and the results, while time-saving and economical, appear to be quite as satisfactory as when longer bed-rest is instituted.

These somewhat rambling observations on the practice and teaching of the Mayo Clinic suffice to illustrate the mode of approach and viewpoint which have developed there as a result of team work. It is frequently pointed out that the progressively lowered mortality rate attained by its surgeons is attributable even more to careful general investigation and diagnosis, pre-operative preparation and post-operative care of the patient, in which the physician plays an important rôle, than to technical advances in surgery—great though these have been. One of the chief contributions of the Mayo Clinic to medicine is, in fact, the demonstration of the great value of harmonious and co-operative effort, both from the point of view of the patient and the doctor. The old adage that “two heads are better than one” is nowhere better exemplified than in Rochester.

General News.

TWO evening F.R.C.S. (Final) Courses of instruction will take place in April / May, on Tuesday and Thursday evenings at 8 p.m., at the National Temperance Hospital, Hampstead Road (formerly known as the London Temperance Hospital).

**F.R.C.S.
(Final)
Courses.**

It is hoped that the percentage of successful candidates will equal, if not surpass, the record reached by the Courses last autumn. There is no doubt that these Courses fill a definite need, enabling those who are engaged with other work during the day to obtain the special tuition so greatly needed for this examination. As before, the Courses will take the form of individual teaching given each evening by five demonstrators, each providing at least two suitable cases which the post-graduates will have the opportunity of examining, and upon the diagnosis and treatment of which they will be questioned. Apart from the clinical work, a certain amount of time will be devoted to pathological specimens and to anatomy. The classes are limited to twenty-five, and it is satisfactory to report that both Courses are full. Two more Courses will be held in the autumn in preparation for the November examination.

THE experimental Course of instruction arranged for the M.R.C.P. examination has now finished, and the post-graduates attending it have expressed their satisfaction with the arrangements made, and with the exceedingly interesting cases provided each evening. The next Course will take place in June, in time for the July examination, and will be run on similar lines, a certain number of demonstrators attending each evening, each providing suitable cases.

**M.R.C.P.
Course.**

A SHORT Course of Practical Pathology was recently given at the Hospital for Sick Children, Great Ormond Street. The aim of the Course was to demonstrate such methods as can usefully be carried out by practitioners away from a laboratory, and to show which of them are of general application. The Course occupied one hour and was held on three days a week for a fortnight ; at the end of each demonstration an opportunity was given

**Practical
Pathology.**