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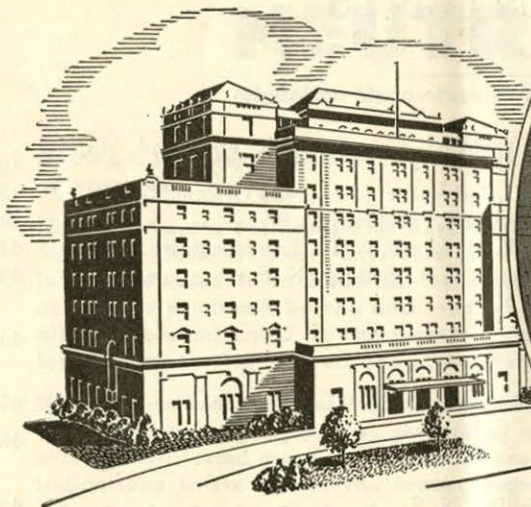
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*The Casualty Clearing Station

COLONEL F. S. L. FORD, C.M.G., A.M.S., and
MAJOR W. L. MACLEAN, C.A.M.C.,
British Expeditionary Force

The notes published herein, under the title, "The Casualty Clearing Station" are of great historic interest, and show how the First Canadian Casualty Clearing Station, B.E.F., in the last war was conducted. Colonel F. S. L. Ford, C.M.G., V.D., A.M.S., prior to the war resided at Liverpool, N. S., where he was born. In 1914 he commanded No. 1 Clearing Hospital, afterwards the First Canadian Casualty Clearing Station. In 1916 he was appointed Deputy Assistant Director Medical Services, Canadian Corps; in 1917 he was Assistant Director Medical Services, 1st Canadian Division. Upon recovery from a severe wound, he was Inspector of Military Hospitals for Canada, 1918-19.

Major Walter L. Maclean, his collaborator, was Surgical Specialist on the staff of the 1st C.C.C.S. A surgeon from Nova Scotia, he was subsequently killed in action.

In the Field, France, May, 1917.

THE following notes have been compiled, having for a basis the experience gained in the field during the present war in Europe. They are far from complete or exhaustive, and in some respects may differ from the principles and practice of others, but are the result of observation of actual work during a period of two and half years of actual fighting, and may be of service to those who are about to engage in this very important phase of the Army Medical Service. These notes may be arranged conveniently under two headings, viz, "Administrative" and "Technical".

Administrative

Before the present war, the most advanced medical unit in the evacuating zone was called a clearing hospital, but it was soon seen that the name was hardly appropriate. The immense number of sick and wounded that it was called upon to handle in a very limited time seemed to take away from it the character of a hospital, and the name "casualty clearing station" came into use; and, although the stationary phase of operations during the past year has somewhat developed the hospital idea in clearing stations, still its chief function remains the rapid evacuation of cases. It was originally a Line of Communication unit, under the I.G.C., but, as the war progressed, it was seen that it was to occupy a more advanced position than had been anticipated, and was, for the convenience of administration, placed under the direct control of the D.M.S. of the Army as Army Troops. While mobilized in the proportion of one clearing station for each division of the field army, it does not necessarily evacuate for any particular division, its location depending largely upon the accommodation to be obtained in buildings, and upon the proximity of the railway. During the present war, at least in Europe, it has been often possible to utilize buildings for the accommodation of clearing stations either wholly or partially, and although a number are still under canvas, during the past winter huts have replaced some of the tents.

The Casualty Clearing Station at the beginning of the war had no transport attached to it, if we except one riding horse per officer. These have now been struck off the strength and three 3-ton lorries have been detailed for duty, with six drivers, from the Army Service Corps through the Director of Medical Services of the Army. The establishment has also been slightly changed by the attachment of an interpreter, three chaplains and a dental surgeon with assistant. From seven to nine nursing sisters have been allotted to each Clearing Station, adding greatly to its efficiency. During active operations the personnel of a C.C.S. is often augmented by personnel drawn from other medical units which do not happen to be actively engaged.

Much Equipment Added

With a long period of comparatively stationary warfare, the clearing station has taken on more of the character of a hospital. It is now supplied with beds for the very serious cases, as many as three hundred of these being seen in one, although the usual number is from twenty-five to fifty. All have very good operating theatres, and a good deal of major surgery is now expected of them. Abdominal cases offering any chance of recovery are operated on with good results. Some of the clearing stations have thus accumulated a good deal of equipment far in excess of the 22 tons as laid down, and there are to be seen in some of them even electric light plants, and electrically heated operating tables and good x-ray facilities. The nominal accommodation of two hundred has in some cases been exceeded by eight or ten times this number, the patients lying upon stretchers, paillasses or the floor.

It was thought that the sick and wounded could be brought from the Field Ambulances in the empty supply wagons returning from the front. This was found to be far from satisfactory, and a new medical unit, the motor ambulance convoy, was organized to do this work. This consists roughly of fifty motor ambulance cars which clear the field ambulances and evacuate patients from the clearing stations to the ambulance trains. In times of comparative quiet the field ambulances evacuate on their own cars direct to the clearing station.

At present, wherever possible, the medical authorities are arranging clearing stations in groups of three to facilitate the work. This permits of the following routine:—One clearing station receives for twenty-four hours. The following day these cases are evacuated with the exception of the seriously sick and wounded unfit for transport. The third is spent in clearing up the station, preparing dressings, etc. The next day the round begins again. This system has been found most satisfactory. In case of heavy casualties, the clearing station takes in until full, when the next in the pool comes into operation, and so on.

If there is a large and suitable receiving room all cases except those requiring extensive operative treatment are more expeditiously dressed at this point, and this practice obtains in many clearing stations, concentrating, as it does, the personnel and equipment, necessary for the work, and keeping the wards free from the dirt and untidiness incidental to it.

Evacuation of Wounded

The Orderly Officer, or one permanently detailed for the work, ensures that every man has affixed to his coat or clothing in a conspicuous place, the card giving the particulars of the case, without which no case is allowed to

leave the receiving room. He also affixes a "tag" with the serial number, which becomes the man's serial number in the Admission and Discharge book. A scratch form A.F.A. 36 is kept for all the particulars and from this the weekly return is made up. He allocates the cases to the different wards. The Quartermaster sees that all valuables are taken from the man and put into bags, properly labelled and stored. When the cases are evacuated the bag containing the valuables, etc., is returned to the man. The Admission and Discharge Officer sees that the "tag" with serial number is collected when the man is put in the ambulance, thus obtaining a perfect check upon all cases sent out. The evacuations are all made by motor ambulance convoy to the ambulance train or barge.

The tour of duty for the staff on "receiving days" and the day following is practically thirty hours. The wisdom of the system of rotation above referred to is thus clearly demonstrated, the "off" day giving a chance for rest and recuperation.

At certain points of the line, special places have been established for the collection of abdominal cases. During heavy fighting, too, the clearing stations have been divided into front and rear lines, the former taking lying cases and the latter sitting, thus preventing the front clearing station from becoming congested, while giving the serious cases the advantages of a "short haul".

Casualty clearing stations, during periods of comparative quiet, evacuate about ninety per cent of cases on the day following their reception. The remainder consist of those unfit for transport and those who will be well in a week. The latter are usually few in number, having had to run the gauntlet of the R.M.O., the Field Ambulance and the Divisional Rest Station. In fact, with the exception of dental and certain infectious cases, after a man has been sent to a clearing station, he is struck off the strength of his unit. This does not apply to clearing stations in the rear area, which, getting much lighter cases, return more men to duty than those in the front area. The cases unfit for transfer are usually head, chest and abdominal. The chest cases are usually evacuated the fifth or sixth day, the abdominal the sixth or seventh day.

During active operations, the work at clearing stations taxes the staff to the utmost, more than five thousand cases in one week having passed through a single station and as many as sixteen hundred in one day. Perhaps no department is more severely taxed than that of the Quartermaster, who has to take care of arms, clothing and equipment of those admitted; the former being cleaned, tied in bundles and shipped to the base ordnance stores; as well as providing for rations and "extras" in the way of food for an ever-changing population.

The clearing station has been termed "the pivot upon which the removal of the sick and wounded turns". Perhaps it more appropriately might be called the keystone of the arch formed by the Regimental Medical Service and the Field Ambulances; and if this arch is complete and perfect, and is supported by an adequate motor ambulance convoy and train service, the clearing of the sick and wounded from the field is assured.

TECHNICAL

The medical and particularly the surgical work in a Casualty Clearing Station is quite different from that of civilian practice. During the present war one is struck by the absence of epidemics. Typhoid has become a comparatively rare disease, the "para" group being much more common. I have

seen only one undoubted case of typhoid (confirmed bacteriologically) during a period of more than two years in France.

The physician in a Casualty Clearing Station finds himself called upon to make specific diagnoses, and to treat those cases which are unfit for transport, such as pneumonia, etc. Cases are frequently sent down marked "P.U.O." (pyrexia of uncertain origin), and "N.Y.D." (not yet diagnosed), and these he sifts out with the help of mobile laboratories to which he always has access, and with the aid of consulting physicians when necessary.

Contagious and infectious diseases are sent to special hospitals, skin diseases to other special units, mental and nervous cases to others, and so on.

A certain number of new diseases has appeared such as trench fever, shell shock, trench nephritis, and less commonly infective jaundice. Much original work on these diseases has been done in the field in conjunction with mobile laboratories.

To summarize, a physician in a Casualty Clearing Station is required to make a definite diagnosis, treat non-infectious cases too serious to travel, and to treat minor cases who will shortly return to duty.

This brief account would not be complete without mentioning the various poisonous drift gases, such as chlorine and phosgene and shell gas. One has to see a number of these cases near the line to realize the awfulness of this mode of warfare. As time goes on, preventive measures are being perfected with the result that cases of the severer type are not so common.

Though they are infrequent, one has constantly to be on guard against the many and ingenious forms of malingering.

The proportion of sick to wounded varies with the period of the year, and especially with the military situation at the time.

The surgery in a Clearing Station stands quite alone, differing from that seen farther down the line, or in civilian surgery. As the months go by, more and more operative work is being done at the front, as the sooner a wounded man is attended to, the greater are his chances of recovery, and the sooner he returns to duty.

Quick Treatment of Wounded

It has become a general practice to treat wounded as soon after admission as possible, providing that their physical condition permits of it, as it is unquestionable that a few hours make a vast difference. Practically all the surgeons at the front are keen young men whose capacity for work is great. It has been found that they can stand the strain of great pressure to which military surgeons are frequently subject much better than more mature men. They have access to and are guided more or less by consulting surgeons appointed for the most part from the teaching centres of Britain. Most of the surgical work is done at night as it is very difficult to get the wounded out of the trenches during the daytime. As a rule in routine work a Casualty Clearing Station has certain days allotted for receiving, thus time is given to treat each case separately. The more serious cases are retained until fit for transportation.

The surgery is usually performed in an improvised hut, heated by a stove and lighted by electric light or acetylene gas. The equipment is limited and facilities for sterilization are few.

Certain general principles are laid down for the treatment of wounded.

A large percentage of cases arrive from six to twenty-four hours after being wounded; perhaps during quiet times the average is from eight to ten hours.

A small proportion arrive in a deep state of shock from their wounds, the cold, and the journey from the trenches. These cases are stripped, warmed, and given fluids by one of the various methods—mouth, rectum, subcutaneous or intravenous. They have nearly always had morphia and anti-tetanic serum. They frequently revive in a few hours and are then taken to the operating room.

Others are suffering from severe haemorrhage and with such cases one gets the best results from blood transfusion, a practice now in much more frequent use than heretofore. In the case of a man suffering from both shock and haemorrhage, and they usually go hand in hand, if he does not pick up in a few hours, he frequently passes into a state of profound toxæmia shown by marked pasty pallor, shallow respirations, and an ever increasing pulse, the forerunners of spreading anaerobic infection. These cases usually die, though good results follow the intravenous use of alkalies or eusol.

Through and through bullet wounds are usually left alone and do remarkably well if the limb is splinted. Where a fracture exists the bullet has usually imparted some of its velocity to bony particles causing a small entrance and a large exit wound with great destruction to bone and soft tissue. Here loose fragments and dead tissue are removed. Lodged bullets, unless superficial, are best left alone.

Excision of Wounds.

Shell fragments always carry in foreign material, such as cloth, mud, etc., and must be removed, the earlier the better. Here the great principle in early treatment of wounds applies, i.e., the complete excision of track and missile, if possible. Where this is done, primary suture and union frequently follow. Where this is not possible nor practicable, either one or three methods is usually employed: the Carrel Dakin method, Grey's Salt Pack, or Morrison's B.I.P. (bismuth, iodine and paraffin).

The secret of all these methods is excision of the wound and complete hæmostasis. Where a large, deep wound can be completely excised, the salt pack is firmly placed and acts as an internal splint. Even when there is no fracture, the limb is splinted externally and firmly bandaged. They do remarkably well. This method has the great advantage that during a "strafe" dressings need not be changed for several days, and this is a real boon. There is a free discharge of clear serum, and, over this, more dressings are applied. If the patient remains for a week, the pack may be removed, leaving a healthy granulating wound which is brought together with adhesive.

The Carrel Dakin method has been the means of saving many lives, particularly in cases of compound fracture of the femur. It is often impossible to excise the entire wound on account of its extent, the retracted muscles forming pockets, etc. As much of the wound is excised as practicable, foreign material removed, and Carrel's tubes, held in position by dressings, are syringed with Dakin's solution every hour, the complete dressing being changed once in twenty-four hours. The ideal result is obtained in a completely excised wound where, in from seven to ten days the wound edges may be united by suture, though preferably by adhesive and secondary union results. The fracture is then treated on ordinary lines.

When B.I.P. is used the wound is excised and a thorough hæmostasis obtained. The wound is swabbed with spirit and the B.I.P. (not more than 2-3 drams) is smeared over the wounded area and rubbed in with gauze sponges

It is then closed by primary suture, a gauze dressing soaked in spirit is applied, and over all is placed a splint. There is a copious discharge of clear serum mixed with paraffin, and a musty odour is noticeable. More dressings are applied over this. It need not be changed for from seven to fourteen days, and then fresh dressings wrung out of spirit are applied over the wound. The great advantage of this method lies in that it lessens the work in a rush. It can also be used in mildly septic cavities as thorax, joints, etc. Several cases of iodoform or bismuth poisoning are reported. During peace time Carrel's treatment gives uniformly satisfactory results and is a wonderful improvement over the old incision and drainage methods.

If the patient has not reached the Clearing Station until his wounds are frankly septic, it is dangerous to attempt to excise them, and simple free incision with adequate drainage gives good results.

Burns are treated by ambrine or No. 7 paraffin wax.

A mobile x-ray is at the beck and call of all Clearing Stations, but it is often inadvisable to wait for the plates, except in head cases.

Sterilization of the Skin

After the patient has had a general clean up, the skin is treated with a preparatory washing of soap and warm water or petrol, followed by simple alcohol and tincture of iodine, or biniodide in alcohol 1-500, and then by picric acid in alcohol.

Anaesthetics

Ether is commonly used. Ethyl chloride or nitrous oxide is used for trivial cases, and nitrous oxide and oxygen for septic amputations, particularly in cases of anaerobic infection.

Chloroform is generally used to induce anaesthesia, as it is quicker to act; but warmed ether has assuredly proved its value. Warmed ether vapour mixed with oxygen seems to be particularly good in abdominal cases. Local anaesthesia is extensively used in head cases and thoracotomies, as well as Crile's method of blocking off. Spinal anaesthesia with stovain and novocaine is sparingly used, and as Marshall has pointed out, does better in later work where there has been no haemorrhage.

Intravenous ether 5% is valuable in shock and gas infection cases.

Special Types.

Head Cases—Free excision of wound is done under local novocaine with adrenalin and previous administration of morphia, or one of its derivatives. Contaminated bone is removed, preferably through a clean trephine opening, but this takes much longer, and the other method of clipping away with rongeur forceps gives good results. Infected edge of dura is removed and damaged brain with clot usually evacuates itself. It is advisable to have an x-ray of each case to localise foreign bodies and the bits of bone which, if near the surface, are removed. The track may be very carefully examined by the finger, but if it is small, the finger should not be forced into it. If the dura is not opened by the wound, it is a much discussed problem whether to incise it or not. One must at least be confident of an aseptic field. Cases of frank pressure are not often seen. Sergeant's drains (perforated silver or zinc tubes) or rubber drains are used down to or into a septic track in brain tissue. It is desirable to close the scalp wound at all costs, and many ingenious flap sliding

methods are in use. This treatment of a clean wound with spinal puncture in suspicious cases, prevents many cerebral herniae. Late results show many foreign bodies retained with small untoward results. These cases usually remain in the Casualty Clearing Station from ten days to two weeks. Haemorrhage from sinuses is controlled by fascia grafts.

Chests

Haemothorax is very common. Bullet wounds of the chest often produce a sterile exudate in the pleural cavity, which requires aspiration only. If done early, the lung expands readily and there is practically no danger from secondary haemorrhage. They do well with morphia administered frequently. Shell fragments, especially if the fragments are retained, are usually contaminated, and require the resection of one or more ribs. The fluid is frequently sacculated by adhesions. Anaerobic infections are not uncommon. Foreign bodies are infrequently removed unless very superficial or free in the pleura. Free drainage is necessary, and Dakin's solution may be used in the pleural cavity, or they may be closed and treated on the same principle as joints. As time goes on surgeons are becoming bolder in attacking chest cases. The one reliable sign in these cases is percussion and the position of the apex beat. One gets very peculiar combinations in physical signs from pneumo-haemothorax either from gas infections or air.

Local anaesthesia is the one preferred unless more radical measures than rib resection are attempted. Chest cases are as a rule kept for a week until the primary dyspnoea has subsided. Very few die from haemorrhage in the Casualty Clearing Stations. The burden of treatment in these cases rests with those at the base.

Abdomens

Speed in abdominal work counts for much, as the patients have usually lost a good deal of blood and are severely shocked. One is extremely likely to find the peritoneum penetrated in back and buttock wounds. The paramedian incision is generally used, though special incisions may be indicated in certain cases. Combination of chest and abdominal wounds do very poorly if operated on, and, if there is a possibility of no gut being injured, are best treated expectantly. Many cases require gut resection, and here the mortality is high. If at all possible only suture should be done. The solid organs do better if left alone, unless there is severe haemorrhage. If necessary they can be attended to later, when the patient is in better condition.

End to end anastomosis is the one preferred as being more rapid. The whole intestinal track is examined, care being taken not to eviscerate the whole small gut, but to go over it quickly, a small portion at a time, to prevent shock. The pelvis is mopped out and drained with a large tube. Success depends on the length of time the patient has been wounded and his condition. Complications are: shock, peritonitis, and paralytic ileus. The last two are combatted by pituitrin, jejunostomy or Sir Sampson-Handley's operation. Abdominal cases seem prone to develop chest complications, but this has lessened greatly since warm ether vapour has been employed. After doing a large number of post mortems, I have yet to see a leak at a suture or anastomosis, though sometimes one row of sutures alone has been used.

The most frequent cause of death is shock or haemorrhage, though gas infection of posterior abdominal wall is not infrequent.

Bladder wounds occasionally complicate a belly wound and when accompanied, as they often are, by fractured pelvis, do badly. Uncomplicated bladder wounds, if treated early and drained, do well.

Joints

Joint wounds, particularly those of the knee, do well. Through and through bullet wounds, with no bone injury, are splinted and aspirated if sterile.

As a rule the wound is completely excised including damaged capsule and track in bone, and the missile is removed. The joint is washed out with saline and the capsule closed. If a large hole exists in the capsule it can usually be closed by undermining and the track in the bone can be frequently made extra capsular. If one is confident of an aseptic excision of the wound, it may be closed by primary suture or a Carrel's tube left in down to the capsule. They are placed in a Thomas knee splint, usually with extension. If a mild infection occurs they may be washed out through needles by a continuous saline stream for hours. Formaline and glycerine or ether may be injected. The majority do well with no antiseptic in the joint, even though a mild infection exists in the outer wound. The knee joint, like the peritoneum, certainly shows remarkable powers of resistance. Cavities left after removal of bone do well with fat grafts.

A certain number of joints require primary excision, particularly where the bone is shattered into the joint. The shoulder and elbow do extremely well provided a clean wound is obtained.

Fractures

In general the long bones are very severely comminuted. They are treated by extension obtained by many ingenious splints, or a direct pull made possible by adhesive plaster, glue, or resin mixtures.

They are usually infected and are treated on the general lines for wounds. The missile must be removed if success is to be obtained.

Amputations

Flaps are preserved if no severe infection exists, but in the presence of infection are left freely open and treated as an open wound by one of the three methods mentioned above. Guillotine amputations are life saving measures used only in septic or gas infections.

Surgery of the Vessels

We do not see the various forms of aneurysms in the Clearing Station, and one does not often see a case where suture or anastomosis of a vessel is possible. However, I have seen the femoral artery sutured with good results (Capt. Ridewood). Paraffined glass tubes are being tried by Captain Charles in large vessels until collateral circulation has become established, also with good results.

In the Field, France,
May, 1917.

The Doctors of Fiction

C. JEFF MILLER, M.D., F.A.C.S., New Orleans

IT would be a work of supererogation, Gentlemen of the College of Surgeons, for me to repeat at this Convocation the things which have been so ably said at other Convocations by my predecessors in this high office. It is quite unnecessary for me to recount to you the ideals and achievements of this organization, for you know them as well as I. It is equally unnecessary for me to urge the newly admitted Fellows of the College to bear those ideals always in mind throughout their professional lives; the fact of their application for Fellowship is sufficient evidence of their desire and endeavour to be guided by them. And so I shall pass over these themes, and in the time at my disposal tonight I shall ask you to consider with me a subject which is far from scientific, yet which I think cannot fail to be of interest to physicians, and to the friends of physicians whom we gladly welcome to this assembly, the subject of the doctor as he is conceived by the novelist.

Five or six years ago a writer of no mean ability, the son of a physician, I believe, in the course of a series of criticisms directed at various aspects of American civilization, paid his respects to the medical profession in a book called *Arrowsmith*. It is, as you know, the story of a vulgar, cynical, disappointed, altogether unworthy young doctor who finally, after various unsuccessful attempts at various branches of medicine, retires to the New England woods, where, so we are led to believe, he is to save his soul by devotion to pure science. Just why he should acquire merit by that particular performance is not quite clear. Those of you who have read the book will probably agree with me that it is very doubtful whether a person of his essential defects of character is likely to win salvation anywhere. Certainly there is nothing in the New England woods, or in pure science either, which can of itself cleanse and purify a person of fundamental unworthiness.

Now this protagonist, who is anything but a hero himself, is surrounded by a group of physicians of his own kind. In the dozens of doctors who crowd the pages of the book there is scarcely one who is not a hypocrite, a scoundrel, a vulgarian, an ignoramus, or worse. There is scarcely one who does not debase his profession and himself. All the grossness of medical life, all the littleness and meanness of college and hospital and profession—and no one denies that they do exist—are depicted with a harsh vindictiveness that overreaches itself and is as unconvincing as it is in the similar studies of Bernard Shaw, Maarten Maartens, and Robert Herrick. This groupe of authors, you will recall, labors under the conviction that to earn one's bread by the healing of the sick is to sell one's soul for hire; it believes that only by a return to nature and by state control of medicine can the purging of the profession be achieved.

As a matter of fact, *Arrowsmith* and other books like it are no more a picture of medical life than *What Price Glory* is a picture of the War. There are unworthy men in the ranks of medicine, just as there are in the ranks of

the Army, but surely they are not all gathered together in one spot. There are also worthy men. Dramatic heightening is a legitimate literary device, but when one undertakes to present a cross section of life, an obligation rests upon one to be honourable about it, and it seems reasonable to assume that amid so many, some few must be at least gentlemen. Yet no one, reading *Arrowsmith* and its like, would think that honour and decency, courtesy and kindness, self-sacrifice and courage, existed among physicians, as they do in full measure.

It is a curious thing that so few novels in which doctors appear present them as they really are, for surely no profession offers the novelist more material in the way of tragedy or comedy, or in the lights and shadows of life. In many novels physicians are little more than lay figures. They are labelled "M.D.," as Weir Mitchell points out, and they are frequently very pleasant people, but they have none of the characteristics of their profession, and they might equally well be lawyers or manufacturers or business men. Even the ambulance surgeons, who arrive with verve and dash and at exactly the right moment, are a colourless crew, and as for the coroners and their assistants—whose name is legion in this day of countless detective stories—most of them are egregious asses.

I have a distinct aversion to a certain group of physicians of fiction, perhaps because I have such an antipathy to their prototypes whom I number among my acquaintances. Their profession is written all over them, and they are persons of tremendous responsibilities. In fact, they never do anything simple. They perform operations of the utmost gravity, preferably on their lifelong enemies, in which they acquire septicaemia or something similar, and generally perish of it, though the said enemy always recovers. They remove portions of the human anatomy—frequently those which are anatomically impossible of removal—just before it is too late. They staunch haemorrhages which would have ended fatally in a split second more. They assume charge in epidemics of cholera and yellow fever, and they meet grave emergencies in countless numbers and always with unrivalled skill and wisdom. But they never by any chance take care of trivial ailments, for the characters of novels would never by any chance so far forget themselves as to have trivial ailments.

The obstetricians of this group annoy me most profoundly. As a former practitioner of that specialty I know, romancers to the contrary, that the occasions are extremely few on which one emerges from the parturient chamber, pale with anxiety and covered with blood, to gasp in trembling tones to the anguished husband, who is equally pale but minus the blood, that it is a question of the mother's life or the child's. I likewise know that when such occasions are met with in real life, far from being romantic, they are merely unmistakable evidence that somebody has been very incompetent indeed.

Finally, there is the group of physicians who are simply too good to be true. These paragons are as unlike human beings in their virtues as *Arrowsmith* and his associates are in their vices. They are more than sweet, they are saccharine, and one turns from them surfeited with goodness and secretly longing for a little wholesome badness.

I digress to remark that one could scarcely expect realistic physicians to walk the wards of the hospitals of the average novelist's imagination. If such institutions really existed, with their informal management and total lack of discipline, especially among the nursing staff, the death rate in them would be beyond all bounds. It has always been a source of wonder to me that

a woman, herself a nurse, could perpetrate a story with as many glaring inaccuracies as Mrs. Rinehart has achieved in *K*, though I grant you that one must be stony-hearted indeed to pick flaws in her spotless hero and his impossible predicament.

The first physician who crosses the pages of English literature appears not in a novel, but in one of the great poems of the world. I have in mind that Doctor of Physick who made his way with the other Canterbury Pilgrims across England from the Tabard Inn that sweet April morning nearly six hundred years ago. He was a proper man, almost prelate in the eyes of mine Host Bailly. Indeed, that gentlemen was so overcome by the tragic story he told that he must demand at once a merry tale from the Pardoner, lest his sadness overcome him and he need the physician's drugs to set him up in health again. The Physician's personal appearance must have been exquisite, for he was clad in fine silken garments of red and blue. And his skill must have been superhuman, for he knew the causes of all illnesses and could heal them all by natural magic and the Bible, as well as by the aid of astronomy, in which he was so well versed that he could tell his patient's prospects from the stars. Withal, he and the Apothecary understood each other from the beginning, and one wonders, though perhaps the thought is unworthy, how much this friendship had to do with the gold which the Physician had won in the plague years and upon whose safekeeping he set so much store.

Four centuries later Smollett, one of the first English novelists and himself a physician of sorts, put many physicians into his books, but they are a sorry group, and one almost wishes that he had not described them so vividly as they buy and sell their patients, as they ply for trade like the scullers at Hungerford Stairs, and as they debase their profession to their own unworthy ends. Ignorant, coarse, and cruel, they may be lifelike, indeed they are undoubtedly representative of the doctors of the day, but as Mr. Mantilini would say, they are "demnition unpleasant".

A more agreeable eighteenth century physician is the famous Dr. Slop, "the scientific operator", who manages to get Tristram Shandy into the world, albeit with a broken nose, after one hundred pages of travail. Mrs. Shandy you will remember, was most anxious to be delivered of her child by a midwife, particularly as the said lady was in need of "a friendly lift"; having been left a widow at forty-seven, with three or four small children, she elected midwifery as her career, on the principle, still in vogue, of personal necessity rather than personal fitness. But Dr. Slop, in spite of her pathetic situation, gets the case, and he appears on the scene with his squat figure and sesquipedalian belly, but minus his obstetric equipment, which, unlike many zealous accoucheurs of this modern age, he has left at home. While the instruments of salvation and deliverance are being fetched, he enters into conversation with Mrs. Shandy, pointing out to her that caesarean section is a sure guarantee that one's child will be a genius. Mrs. Shandy, wiser than many of her modern sisters, indicates that she will chance having a less bright child, and Dr. Slop the diplomat explains that he was merely admiring what he knew it was to no purpose to propose. Finally the instruments are brought, so tightly tied into the bag by the zealous Obadian that the lady almost dies before they can be extricated, and the delivery is effected with excitement if not with skill. The "vile instruments" crush the bridge of the infant's nose, a false one is made and fitted, and amid the "splenetic cordiality" of Dr. Slop and Susannah, Tristram is christened, though unfortunately with the wrong name. Mr.

Shandy, of course, was the best obstetrician of them all—you remember his sage advice to the scientific operator, "Stay thy obstetric hand, return it safe to thy bosom to keep it warm".

The physicians of a century ago seem an eternity removed from our day, perhaps because the ailments they treated were so astonishingly unlike those we encounter now. What migratory inflammations there were then, and how disconcerting it must have been to check them in the chest only to have them break out in the brain. How dangerous night air was, and how quickly it could bring about a fatal issue, especially after surgery. How easily emotion caused tuberculosis or brain fever, and with what remarkable speed it precipitated labor. What a nuisance the relatives must have been, with their hysterics and their swoons. What an equal nuisance the nurses must have been, for their sensibilities were so strong that treatments were frequently halted while they were assited to totter from the room, overcome by their feelings. What dreadfully protracted agonies the death beds were, and in what painstaking detail the patients were told that the end was to be expected and just how it was going to occur. Small wonder that even the dynamic Dr. Sampson, the famous advocate of the chronothermal theory of diseases, which, as everyone knows, is based on unity, periodicity, and rhythm, is quite submerged under the weight of the pathology he must relieve.

There are many physicians in Dickens, but the portrait of none of them equals the matchless characterization of Sairey Gamp, most terrible and most delightful of nurses. Harold Skimpole was educated for medicine, among other things, but since he was a mere child in point of weights and measures—as well as in point of anything else that involved responsibility—he had never been able to prescribe with the requisite accuracy of detail, not to mention the fact that he usually couldn't come when summoned. Over his less pleasant traits it would be charitable to draw a veil. Richard Carstone took up medicine, I fear as too many are still taking it up, because it would do as well as anything else, but for my own part I am grateful that he did. Otherwise we might not meet Mr. Bayham Badger, whose surgical abilities fade into utter insignificance beside the delightful fact that he was the third husband of Mrs. Bayham Badger, and inordinately proud of having been preceded in her affections by those two distinguished gentlemen, Captain Swosser of the Royal Navy and Professor Dingo of European reputation. Dr. Parker Peps, who officiates at the closing scenes of poor Mrs. Dombey's life, in company with the insignificant Mr. Pilkins, is so accustomed to association with the nobility and so used to assisting at the increase of great families that invariably, wherever he is, he takes a leaf out of Mr. Weg's book and "drops into" titles. Another obstetrician of merit is the family physician of the Kenwigs, Mr. Lumbey, who has brought them all into the world from Morleena on down, and whose clientele is so prolific that he must even forego shaving.

Mr. Chillip, meekest of his sex, who moved as silently as the ghost in Hamlet and who came into a room sidewise to take up less space, we remember best sitting on the dark, draughty stairs whither he had fled to escape the piercing glare and the terrifying words of that martinet, Miss Betsy Trotwood. There is that unspeakable "pair o' sawbones", to quote Mr. Samuel Weller, Bob Sawyer and Benjamin Allen, whose sporting tendencies stick out all over them, who entertain their guests with case reports and who enliven the breakfast table with practical experiences in anatomy, on the principle that there is nothing like a good dissection to give one an appetite. The bottle is their

unfailing recourse, they resort to the most ingenious expedients to create the illusion of a large and responsible practice, and Bob Sawyer doses his patients with calomel when other drugs happen to be out of stock and he lacks the wherewithal to replace them.

There are many others: the fashionable physician who misunderstood Mr. Merdle's case so thoroughly that the poor gentleman finally cut his throat; the filthy Dr. Haggage of the Marshalsea; the family physician of the Chuzzlewits, who pretends at the funeral not to know the undertaker, though he gives him many a bit of trade; and the dozen odd who enter with creaking boots and ticking watches and pompous demeanor, and who are so omniscient that they invariably prescribe for their patients exactly what their lay attendants have just given them, and who naturally win considerable fame by so doing. As to the physicians who are worthy of their calling, I recall only two, Dr. Manette and Allan Woodcourt, and, like most of Dicken's heroes, they are not nearly as interesting as his villains.

One of the most famous physicians of fiction was created by the late Sir Arthur Conan Doyle, himself a physician, who, as he put it, abandoned practice because practice abandoned him. Dr. Watson is Greek chorus to that superman, Sherlock Holmes, for who, as somebody says, he serves as a conductor of light, though not himself luminous. For luminous he certainly is not. He makes suggestions only to have them knocked down, he asks questions only to have his ignorance exposed, and when left to investigate anything himself, he omits no possible errors. But his lack of intuition makes Holmes' brilliancy the more scintillating, his reverent worship creates in us the same illusion, and without the blundering admiration of "My dear Watson" the whole edifice would fall. What sort of physician he was we are left to guess, and in his rôle of Boswell his practice must have been sadly full of interruptions, but one cannot help agreeing with Benet's paraphrase of Chesterton's delightful remark about Sairey Gamp, that he would rather die under the ministrations of Dr. Watson, with the chance of hearing a good story while he was doing it, than be saved by a more aseptic practitioner.

Austin Freeman has created a Sherlock Holmes up-to-date in Dr. Thorndike, and a Dr. Watson up-to-date in his satellite, Dr. Jervis. Dr. Thorndike is a super-detective, a physician versed in medical jurisprudence as well as in everything else on earth, for his knowledge is rather more marvellous than Holmes' own. He needs Dr. Jervis for contrast, but it might be added that his rebukes to his special *fidus Achates* are administered in a rather more delicate manner than are Holmes' devastating criticisms, though their effect is precisely the same.

The women physicians of fiction are mercifully few, for they are most of them thoroughly unconvincing ladies. Dr. Zay, Dr. Breen, Dr. Anna Prince, and Dr. Lurida Vincent were all depicted in the days when women were first battering at the doors of medicine, and they must have furnished excellent arguments against the admission to the ranks of any others of their sex, for more unprepossessing creatures it would not be possible to imagine. In fact, I know of only one woman doctor whom I should be willing to have around me if I should be hapless enough to need such services. She is Dr. Jean Gordon, the young Scotch assistant of Dr. Luke Serocold, and her womanly competence is sharply etched against the background of her impossible predecessors.

There is a group of young physicians drawn by young physicians for whom literature had a stronger lure than medicine, which includes Stark

Munro, Philip Carey, Kit Sorrell, Christopher Hazzard, and Edwin Ingleby. Most of them are excellently presented, but for the classic illustration of their kind we must go back many years, to Philip Lydgate of *Middlemarch*. Certainly he is typical of all the bright young men who begin their practice with ideals, and who find, as Paget says, that practice is the breaking of dreams. He began with dreams and visions, he ended without a single illusion, and a failure in his own eyes, though a success in the eyes of the world, because he had not done what he once meant to do. Sir William Osler was so impressed by the part his silly wife played in his career that he often reverts to it, warning his students to pick their mates carefully, and not too soon, to keep their affections on ice, and never, if they would be wise, to sport with Amaryllis in the shade.

Most of the realistic physicians of fiction have been painted by laymen and not by physicians. One of them is Anthony Trollope's Dr. Thorne, apothecary as well as physician, as all doctors, he says, would be if they consulted their own dignity less and the comfort of their patients more. Noble ladies with imaginary ailments often found him unsympathetic, but no poor woman lying on a bed of sickness ever thought him rough, and he is a great contrast to Dr. Fillgrave, who sat with dignity in his carriage and stepped with dignity up the front steps, but who did not have much ability beyond that, in spite of having persuaded the countryside that no one could die respectably without him. Dr. James Winter is a very delightful physician in *Round the Red Lamp*, who prefers inoculation to vaccination, who would practice bleeding freely except for public opinion, who regards chloroform as a dangerous innovation and the stethoscope as a new-fangled toy—though he is willing to carry one out of deference to his patients, since he is deaf and cannot hear out of it anyway. In spite of his whims he has the healing touch, because, unlike many scientifically trained physicians, he uses his hand and eye. There is Peter Harding, M.D., who in his letters from the Corner of Harley Street paints for us a charming picture of a physician and who, Sinclair Lewis and his ilk to the contrary, manages to be happy and successful in his work because he lives his profession and is full of warm humanity and common sense.

There is Willy King, as real a personage as old Dr. Lavendar himself and quite as kindly a one. I have not read the chronicles of Old Chester in years, but I seem to see him now in his ramshackle gig—was he described as chubby or do I merely imagine that he was? He was handicapped in his ministrations by the fact that he had been known to most of his patients since babyhood, and it is hard to receive castor oil from the hands of somebody to whom you once administered a spanking. And he was handicapped even more by his commonsense Martha, whose favourite occupation was to tell him and everybody else who would listen "flatly and frankly" what she thought of them, though his honest goodness would never let him admit her limitations.

I have a special fondness for Dr. Luke Serocold, G.P., the central character of Helen Ashton's novel, which has recently received the dubious distinction of being chosen as the Book of the Month. It was written by a former medical student, in answer to her husband's challenge that a whole book could not possibly be written about one day in the life of a doctor, and a most excellent answer it is. It runs the gamut of emotion, it ranges from birth to death, and it has at once the tremendous excitement and the everlasting monotony of detail that every day in a doctor's life holds. Dr. Serocold is a physician of the old school, trained in clinical rather than in scientific medicine, schooled to

meet the emergencies of a country practice, sensitive to the spiritual as well as to the physical needs of his people. Every house, as he passes it, suggests an old patient or an episode of his practice, and he muses, as he goes on his way through the village streets, on the riddle of life and the secret of medicine, the solution of which is that since one cannot hope to cure people, the best one can do is to try to relieve them.

The most perfect antidote to the school of Arrowsmith is found in men like Dr. Serocold, and even more in men like Dr. William MacLure of the town of Drumtochty. Because his practice extended up and down the Glen, through rivers and over mountains, he had little time for reading and none for travelling, but the scars on his face and his body were honourable scars, got in the service of his people, and men are given the Victoria Cross for them in another line of endeavour. His clothing was nondescript, but when those breeks from which the cheeks were nearly gone were seen at the door, one knew that if human power could save a life, that life would be saved, for the sight of him put fresh courage into sinking hearts. He carried the heaviest weight of all his people, for he strove with death for them and he bore all their sorrows in his own heart, but he was too modest to realize that he had gathered more love than any other man in the Glen. As he had lived, so he died, withdrawn and still, in his ears the stammering prayer of his old friend Drumsheugh, "Almighty God . . . dinna be hard on Weelum MacLure, for he's no been hard wi' onybody in Drumtochty . . . Be kind tae him as he's been tae us a' for forty year . . . Mind the fouk he's helpit . . . the weemen an' bairnies . . . and give him a welcome hame, for he's sair needin't after a' his wark. Amen." With the words of the Shepherd's Psalm on his lips, and the dream of his mother's kiss, he fell asleep, and "the peace on his face was of one who rested from his labors".

You remember the end of the tale, I am sure, the simple burial service in the snowdrifts, with his own people about him to do him the honour and show him the love they had always borne for him, though perhaps they had seldom expressed it in his life. You remember the shepherds in their blacks, the Laird of the Glen uncovered, the cynic Jamie Souttar with tears on his face, the women and children weeping quietly as the little procession went by. You remember the minister's prayer, "That we might have grace to live as this man had done from youth to old age, not for himself but for others, and that we might be followed to our grave by somewhat of 'that love wherewith we mourn this day thy servant departed' ". And so the Glen laid him to rest, this man who had served it for more than forty years with a devotion that knew no reserve, with a kindness that never faltered.

I began this rambling paper, Gentlemen of the College, with the story of a callous and cynical physician whose ideal, if such a person can be said to have an ideal, was devotion to pure science. I close it with the story of a simple-hearted, kindly doctor, untrained in the new efficiency, whose ideal was service to his people. I have no moral to point, but it has crossed my mind as I wrote that perhaps it would be well for us to remember, since we are of the new day in medicine, that when they come to pass through the Valley of the Shadow of Death, it is not upon the Arrowsmiths but upon the William MacLures that men and women would cast their burdens.

Chance in Small Samples

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THE increasing use of statistical methods in the analysis of data by the writers of articles published in the various medical journals requires that the reader become similarly equipped with some knowledge of the procedure. For the younger medical graduate it may only be necessary to build upon an introduction to the subject obtained in medical school, while the older man perhaps lacking even this brief acquaintance with the theory of statistics, will be obliged to consult some textbook. In any case it is desirable to know something of both the scope and the limitations of the methods employed in order to be able at least to evaluate properly the conclusions reached by others.

The size of the samples in the different studies reported is seen to vary considerably, ranging from the small group numbering only a few individuals such as the cases that come within the experience of the private practitioner, up to population samples involving over a million people, as in the National Health Survey of 1935-36 undertaken by the United States Public Health Service. Frequently the number is not more than a few hundreds of persons. In all samples, of whatever size, allowance must always be made for the occurrence of variation in results due to the operation of chance alone. The amount of variation is highly influenced by the size of the sample. Since the number of cases on which conclusions are based is often small it seems important to note first the effect of chance in small samples.

The theory of simple or random sampling is often approached by considering the results obtained in coin tossing. The argument is somewhat as follows:—A penny when tossed at random will come to rest with either head or tail up, and the chances for either result are equal. Repeated tossings should give about as many heads as tails, though not necessarily exactly the same number. Similarly, when several pennies are tossed together, there is an even chance for any one of them to fall either head up or tail up. In a single toss with say ten pennies, out of the eleven possible combinations the favoured number of heads to show would be five, although other end results, such as four or six heads, are quite likely to occur. There is little chance that no heads or one head will show. If larger numbers of pennies are tossed together, say 100, we should expect 50 as the most likely result, 40 or 60 heads as less likely, and one or no heads as extremely unlikely. By marking down the count of heads in repeated tosses a frequency diagram of the end results can be built up. Using a sample of ten pennies it will be rather irregular in shape, high in the middle and tapering off to both sides. With a larger number of pennies in the sample, such as 100, the results of repeated tosses make a figure resembling a smooth curve. If we agree that the different results obtained in penny tossing are due to chance, since the odds are the same for each penny to fall either head or tail uppermost, we can then begin to get an idea of how chance operates. Small variations occur often, such as six heads instead of five heads, while large variations, no heads, are less likely. With the aid of mathematical formulae we can tell how often, on the average, we should expect certain results or variations. For example, with the sample

of ten pennies, we should expect five heads about twenty-five per cent of the time, and four heads or six heads about twenty per cent of the time.

What is the interest and application of this theory to the problems of the medical worker? Instead of ten pennies, suppose there were ten patients, with an illness for which the case mortality rate, established from observations taken over a long period, was fifty per cent. Suppose the physician gave these ten patients a new treatment and four of the number died, a rate of forty per cent. The general mortality rate was fifty per cent, but in the sample of ten patients given a new treatment, the mortality was forty per cent. Should this experimenter conclude that this treatment had reduced the mortality rate by ten per cent? With ten pennies, where the chances were even for either heads or tails to fall, five heads appeared more often than any other number, but four heads also were quite likely to appear, just by chance. So with ten patients when the chances of living or dying were fifty per cent, we might expect a forty per cent mortality to occur frequently, by chance alone, if no treatment had been given. If then chance could produce the observed result quite readily, it would not seem reasonable to declare that the treatment was the cause of the reduction in mortality. It may be true that the treatment has been the cause of the reduction, but all we can say is that with a sample of this size there is no evidence to support that theory.

The "Atom Smasher" and Cancer

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THE fight against cancer goes on all over the world in spite of world war disturbances. It must necessarily be slowed in European countries, but on this side of the Atlantic there is no let up. Education of the public is the great factor in cancer prevention. 75% of the reduction in the mortality of tuberculosis has been brought about by the education of the doctor and the public in a few simple signs. So in cancer, if the patient is educated to the signs of early disease, he or she will seek medical advice about unhealed sores, lumps, and unusual discharges of blood. Early surgery and early treatment by radium and X-rays will do a great deal towards lessening the mortality of cancer. It has, so that Dr. Louis Dublin, famous statistician of the Metropolitan Life Insurance Company says that at present "the situation in the U. S. A. is far from alarming". The disease is not showing a rapid increase. The American College of Surgeons investigated the question for the years 1932-34 inclusive, and showed 25,000 authentic cured cases during that three-year period.

Radium and X-ray are being used in all countries for superficial cancer with good results. A new weapon has lately come into use, and experimental work indicates that it will supplement and may supplant X-ray and radium in the treatment of deeply seated cancer as well as superficial types of the disease. This addition to the list of agents used against malignant disease is the cyclotron or "atom smasher", which is said to be by one writer "one of the most remarkable devices the human mind has yet produced". It smashes atoms by whirling round and round charged atomic particles at a speed of at least 25,000 miles a second and delivers them with energy enough to pierce and change the nuclei of other atoms. Transmutation of the elements is produced and the dream of the old alchemists has at last come true. New and strange substances are isolated. One of these lately developed is Uranium 235, which seems to have made possible the long expected release of atomic energy. Uranium has been hidden away in the same material, pitchblende, from which radium is obtained. It is many millions of times more plentiful than radium and gives billions of times more energy.

Speculation on the possible applications of this great discovery seems to suggest that a new source of power may soon be available as soon as means are found to control its release. Coal and oil will not be needed any longer as sources of power. A small quantity of Uranium 235 installed in the heating plant of a new house would keep it warm as long as the house stood. An automobile might have it installed when the car is built so that there would be enough fuel supply to last as long as the car. Eight pounds of Uranium would release energy equal to 6,300 tons of fuel oil which the Queen Mary carries in an Atlantic crossing, and so on.

But the chief interest of the medical profession in these amazing developments is the therapeutic use of the cyclotron in various forms of cancer. The University of Pennsylvania, according to an article in the *N. Y. Times*, has

been presented with \$200,000 with which they will build a 250-ton cyclotron. This machine will develop energy equivalent to that of 200 lbs. of radium, "a staggeringly great quantity when it is considered that there are in the world less than 2 lbs. of radium that has been purified since its discovery". The California cyclotron has been limited to two days a week for cancer therapy because of the great demands in the various fields of physical research. In Philadelphia the radiologists will be chiefly concerned with the possibilities of direct therapy in cancer. The machine is to be used exclusively for medical purposes, particularly in treatment of cancer. Two techniques will be used. In one, various chemicals will be made radio-active after which they can be given to the patient. The patient will be subjected to a stream of neutrons, in the other.

With this supplant or supplement X-ray and radium treatment of cancer? Will all large cities install "atom smashers" instead of X-ray machines? Evidence will soon accumulate for in every large centre there is always a great number of cases ready for treatment. Meanwhile new cyclotrons are being built. Columbia University has an important unit where the Uranium atom was split for the first time in America. Other machines are being erected in Washington, Minnesota, and many laboratories all round the world. Lawrence has plans for a 2,000-ton cyclotron and has obtained a gift from the Rockefeller Foundation of \$1,150,000 towards the cost. Great discoveries in the field of physics seem to be imminent.

Clinical Amphorisms

H. A. GIOVANNETTI, M.D.,
Sydney, N. S.

IN hospital practice, disease of the valves of the heart; in private practice, disease of the nerves and muscular tissues, and in the end, both forms of disease approximate each other; valvular disease leads to affections of the muscular walls, nervo-muscular disease leads to dilatation of the cavities and valvular orifices. In the senile heart, both conditions are often associated from the first, although the valvular degeneration may afford no physical signs even throughout the whole course of the disease.

Affections of the muscular tissue of the heart are usually more serious than those of the fibrous tissue (e.g. the valves) but afford much less definite physical signs, and therefore are less easily discovered. A beginner can hear murmurs and detect valvular diseases; but it requires long experience to appreciate nervous and muscular affections of the heart.

If more than one valvular lesion be present in a heart, it often happens that not more than one is diagnosed. One of the commonest combinations is that of mitral stenosis with aorta insufficiency, and then the development of the typical aortic diastolic murmur may be considerably interfered with.

These valvular diseases of the heart which yield the most peculiar and characteristic symptoms are aortic regurgitation, mitral constriction and tricuspid regurgitation. The other forms of valvular disease are less significant or less common.

Dilatation of left ventricle may occur in a heart having mitral obstruction. This seems contrary to theory, but cardiac dilatation cannot be wholly explained by a consideration of pressure effects. The amount of dilatation in the case above mentioned is sometimes astonishing. There is no kind of valvular disease of the heart which may not produce a thrill.

Mitral disease causes lividity by interfering with the circulation of the blood, bronchitis by interfering with its aeration, and emphysema in both ways.

Jerking pulse, capillary pulsation, visible pulsation and twisting of the arteries, though all useful signs of aortic regurgitation, are none of them pathognomonic. Each may occur without the presence of any valvular lesion, and in old people they are often due to arterial degeneration. Jerking pulse is common in atheroma of the aortic arch. Venous pulse in the superficial veins of the arms or hands, however, must be regarded as a more conclusive sign of aortic regurgitation, for it only occurs in the course of that disease, and perhaps in a few cases of extreme debility.

A rarer sign but one which is pathognomonic of aortic regurgitation is conduction of the diastolic murmur in the large arteries, such as the femorals, over which vessels it is heard on auscultation, without using pressure by the stethoscope. In these cases the murmur is shrill.

Ulcerative endocarditis may produce quotidian fever for some weeks before the appearance of physical signs on auscultation of the heart.

Very great dilatation of the heart is commoner in children than in adults, and may be produced more rapidly, in a few weeks even.

Signs afforded by the jugular veins are as useful indications in disease of the right heart as are signs afforded by the arteries in diseases of the left.

In the discovery of adherent pericardium we seldom get farther than a guess.

Pericardial effusion, even when not abundant, is sometimes a cause of sudden unexpected death.

Pericarditis is not so common now as formerly. A fact which must be attributed to the use of Sodium Salicylate in the treatment of rheumatic fever. Endocarditis, however, seems as common as ever, for it occurs before patients come under treatment. In cases of erythema you should always examine the heart, for pericarditis is sometimes found without any rheumatic symptoms. Pericarditis is common in Bright's disease, but is not often detected ante-mortem. In pericarditis the friction sound may remain in spite of a considerable liquid effusion.

Dropsy, lividity, scanty urine, and weak, irregular pulse—these are the four symptoms which taken together indicate the use of digitalis without regard to the nature of the heart lesion producing them. On the other hand, the use of digitalis is not indicated by finding on examination that the heart is dilated, the above symptoms being absent.

Orthopnoea is usually a sign of heart disease, even if the lungs be affected in the first place. Leaning forward in bed, a sign of disease of the pericardium, aorta, or mediastinum, or of a very large heart.

In cases of heart disease we should investigate first the symptoms afforded by the attitude of the patient in bed, by the colour of the lips and cheeks, by the pulse, by the jugular veins or by dropsy, before proceeding to physical examination. For this reason books written before the discovery of auscultation are worth reading, if only to show how much the physicians of that day could find out apart from the help of physical signs. Symptoms and not physical signs guide our prognosis and treatment.

The Nova Scotia Medical Bulletin

Official Organ of The Medical Society of Nova Scotia.

Published on the 20th of each month and mailed to all physicians and hospitals in Nova Scotia. Advertising forms close on the last day of the preceding month. Manuscripts, preferably typed and double-spaced, should be in the hands of the editors on or before the 1st of the month. Subscription Price:—\$3.00 per year.

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It is to be distinctly understood that the Editors of this Journal do not necessarily subscribe to the views of its contributors, except those which may be expressed in this section.

VOL. XIX.

AUGUST, 1940

No. 8

THE editorial signed D. K. M. in the June number of the NOVA SCOTIA BULLETIN was very interesting and instructive, and as you requested me to write for the BULLETIN I am continuing the consideration of the question of car driving by those who have taken a quantity of alcohol, no matter how much or how little. As a Coroner the writer has had quite a little experience during the past few years in the Coroner's Court in reviewing deaths caused by cars driven by those who have taken one or more drinks of alcohol under different names, beer—whiskey—rum, etc.

I think it is quite correct to state that alcohol may be classified as a drug under the narcotic class, and if so, the quantity taken has more or less an effect on the nerves and muscular system of the body. For instance, morphine if taken in one-quarter grain dose will relieve pain, gives rest and produces sleep. Strychnine a different type of drug may stimulate, and if a large dose is taken causes death. Either of these drugs can only be obtained from a drug store through prescription from a regular registered medical man. A death from these drugs very rarely occurs, but nevertheless the law is exceedingly strict as only by a physician's certificate can either be obtained.

It is true we have quite a number of drug addicts who are immediately brought to task when discovered, and the doctor who gives an addict morphine may be brought before the Court and fined. I do not believe anyone will deny the statement that many more deaths are caused by the use of alcohol than either morphine or strychnine, and yet our liquor dealers are allowed to sell millions of dollars worth, and the public buy it without any serious questioning.

Some years ago the British Government asked the British Medical Association to appoint a committee to consider the place of alcohol in the causes of road accidents. The committee was appointed, and on that committee were many of the leading members of the profession in Great Britain. The report is most interesting and very convincing. The following are a few sections from this report.

"Sec. 9. It is almost universally agreed among all those who have studied the subject that the first effect of alcohol, and the effect of the smallest doses, is upon the higher functions of the brain. We know of no better guide than the Alcohol Com-

mittee of the Medical Research Council, which came to the conclusion that 'the direct effect of alcohol upon the nervous system is, in all stages and upon all parts of the system, to depress or suspend its functions; that it is, in short, from first to last a narcotic drug'.

"Sec. 14. The driving of a motor car involves a succession of highly skilled muscular movements, which are dependent on rapid and accurate co-ordination between the eyes, hands and feet. The eyes are constantly moving in response to changing visual impressions, and it is found that the speed with which the gaze is directed to fresh objects is measurably impaired by the drinking of alcohol. Investigators have found that after tests on men who had taken diluted alcohol equivalent to four ounces of whiskey, they showed an average delay of 15% in their speed of movements."

In Nova Scotia we have had many deaths through car accidents, and the evidence given showed that in many instances alcohol had been used before the drive began, and in many cases accounted largely for these deaths.

This is not written as a temperance article, but rather to bring before the profession certain facts which might very properly be considered at some future meeting of our Society, and some action taken to prevent as far as possible future accidents. The writer feels that the old advice is excellent, "If you drive don't drink. If you drink don't drive."

J. K. McL.

CASE REPORTS

Cancer in the Epigastrium

MAN, fifty years old, a hard drinker, except the past few years. No family history obtained. For two or three years he has had pain after taking food, occasional vomiting, and progressive loss of flesh and strength. For eight or ten weeks in 1938 he complained of frequent and severe pain of a "stretching" character in the right hypochondrium, without much tenderness there; followed in two weeks by deep jaundice. For a week he was confined to bed and is emaciated and prostrated. His nights were disturbed by pain. The liver was greatly enlarged, hard and irregular, and nodulated, the lower edge reaching almost to anterior spine of the ilium, it also extended to the left of midline; it was slightly tender. There was little or no ascites. Pulse 92, temperature 98.5°. Urine rather scanty and very dark. No itching of skin.

(1) What diseases can produce emaciation with jaundice? Gall stones and their results, cancer obstructing the biliary passages, syphilis of the liver, cirrhosis, septicaemia (toxic jaundice).

(2) Common causes of hepatic enlargement? Passive congestion, biliary obstruction from any cause, fat, cirrhosis, cancer, rickets. Rare causes are abscess, leucaemia and pseudo-leucaemia, cholangitis, amyloid and hydatid disease.

(3) What importance would there have been in a good family history? None in this case.

Diagnosis. Gastric symptoms, nodular hepatic enlargement with severe pain, emaciation and jaundice, without evidence of portal stasis (ascites, etc.) point strongly to cancer of the liver, probably secondary to gastric cancer. The history of alcoholism and the hepatic enlargement suggest cirrhosis, but there is rarely, if ever, so much pain in cirrhosis (or indeed in any liver disease except cancer) and the "hobnails" of cirrhosis are not enough to make the liver feel "irregular or nodular" through the abdominal wall. The absence of ascites is also against cirrhosis. Syphilis of the liver might produce all the signs described and can only be finally eliminated by the therapeutic test, but the amount of pain here present is almost unknown in syphilis and the amount of hepatic enlargement is very unusual.

Prognosis. The prognosis of gastric cancer is almost invariably bad, even after the most favourable type of operative interference. As a rule, the symptoms last from eight months to eighteen months after a patient first begins to be distressed. Yet under careful diet and rest very marked improvement not infrequently occurs, especially if the patient is given the benefit of encouragement and frequent lavage.

Treatment. Operation should be advised in all early cases as soon as the diagnosis is made. Unfortunately, there are very few cases which can be truthfully said to belong to this category. The diagnosis is usually impossible until the disease is advanced beyond the stage in which operative measures can furnish any considerable measure of relief. Cases in which tumor is

palpable, are very rarely benefitted by operation, which should nevertheless be undertaken in practically every case, because of the possibility that the tumor may not really be cancer at all, but may represent a thickening about the site of a peptic ulcer. It has been known to be impossible to distinguish a cancerous tumor from the perigastritis associated with ulcer, even with the abdomen opened and the mass exposed to sight and touch.

H. A. GIOVANNETTI, M.D.,
Sydney, N. S.

OBITUARY

The BULLETIN extends sympathy to Dr. Duncan MacMillan of Sheet Harbour on the recent death of his wife.

The BULLETIN also extends sympathy to Dr. M. Jacobson of Halifax on the death of his father, Mr. J. S. Jacobson which occurred on August 4th.

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Correspondence

To the Members of the Medical Society of Nova Scotia.

There have appeared in the last two editions of the BULLETIN an editorial and two letters all of them expressing dissatisfaction with the present method of ranking medical officers by the Department of National Defence. Certain suggestions have been offered showing how this state of affairs could be improved.

There is no doubt the several writers have pointed out an injustice. The emphasis placed on previous training in the militia is altogether too much, and from the medical standpoint is absurd. How much more valuable to the army is the physician who has served in the militia? I would say very little, or perhaps none at all, and yet this seems to be the all important question in settling the matter of rank.

One of the letters, that of Dr. McGrath of Kentville to Dr. H. W. Schwartz, would give the impression, in fact he makes the statement, that the leaders of the Canadian Medical Association and the Medical Society of Nova Scotia show no interest in this matter. This is not so.

From the beginning of the war the Canadian Medical Association and the Medical Society of Nova Scotia have been most active in the interests of the profession. As most of our readers know, a National Medical Advisory Committee was appointed by the Canadian Medical Association whose duty it was to confer with the Department of National Defence on appointments to the army and medical matters in general. This committee has functioned since the beginning and representatives of the Canadian Medical Association have advised the Department of National Defence of the qualifications and fitness of applicants from the beginning of the war up to the present date. The Medical Society of Nova Scotia has made a survey of the doctors of our province and information from this survey is on file in this office. This information gives the total number of doctors in practice, it gives their location, it states whether or not they are willing to serve overseas, and if not what they will do in Canada or in their own district. This file has been used extensively by the military authorities in District No. 6. The matter to which Dr. McGrath referred, also referred to by Dr. Hemmeon, and in the editorial by "H.W.S." has been brought to the attention of the Canadian Medical Association by this Society, and by the Canadian Medical Association to the Director General of Medical Services in Canada. At the Maritime conference held in Moncton on April 29th and 30th the matter of ranking of medical men was thoroughly discussed. Several physicians from Nova Scotia had the same objections to the present method as those set forth by Dr. McGrath, and also several doctors from New Brunswick. Following this, Dr. J. R. Corston, our representative on the executive of the Canadian Medical Association, and Dr. H. K. MacDonald, the President of the Medical Society of Nova Scotia introduced the subject at the meeting of the Canadian Medical Association at Toronto. As a result a committee of the Canadian Medical Association, of which Dr. Corston was a member, called on the Director General of Medical Services for Canada, and placed this protest before them. It is quite true

that nothing has resulted from our actions, but it is unfair to say that the Canadian Medical Association and the Medical Society of Nova Scotia have shown no interest in the matter. I personally cannot see how, under the circumstances, either the Canadian Medical Association or the Medical Society of Nova Scotia could have gone much further.

I know that Dr. Routley, the Secretary of the Canadian Medical Association, is quite capable of speaking for himself, and so is Dr. J. R. Corston, chairman of the District Advisory Committee. However, as Secretary of the Medical Society of Nova Scotia, I feel it my duty to acquaint the doctors of the province with the activities of our Society to date regarding this matter. The annual meeting of the Medical Society of Nova Scotia will be held on August 27th, where any member of the Society has the opportunity to bring this, or any other matter pertaining to the welfare of the Society before the Association.

H. G. GRANT,
Secretary.

To the Editor,
NOVA SCOTIA MEDICAL BULLETIN
Dear Sir:

I read the editorial by Dr. Schwartz in the June issue with much interest. However, I think there is another matter pertaining to medical men enlisting for service which also deserves consideration. I refer to the fact that there is no safe-guarding of the practices of those who are leaving their work for what is usually considered a temporary service.

The ideal, of course, would be for each enlisted man to find a substitute until he returns but there are few fortunate enough to make such arrangements. When a doctor leaves a practice without a substitute could there not be an understanding that his work be taken up by the remaining doctors rather than by an outsider coming into his place? Could there not be a general agreement among the men of the profession that whenever possible a doctor can return to his former home and work after the war without finding it in the hands of a stranger?

Men in other occupations will have their positions reserved for them, but doctors are depending only on the good-will of their confreres to have their practices restored. There are instances in which such practices have already been taken up by new-comers, improving their position at a time of exigency. The argument advanced by these men is:—"Some one will go in there if I don't." Such a statement may be true but the if idea is ethically wrong and savors of "war-profiteering", as I believe it does, then it can not be condoned in such a way.

Yours truly,
J. A. F. YOUNG, R. C. A. M. C.

Personal Interest Notes

LT.-COL. J. G. D. CAMPBELL, M.D., of Halifax, has been appointed to command of No. 7 General Hospital, Canadian Active Service Force, the Department of National Defence announced at Ottawa on July 24th. Col. Campbell has been serving recently as District Medical Officer of Military District No. 6, Halifax. He started his military career with the Canadian Officers' Training Corps while a student at Dalhousie University and served overseas in the First Great War.

Dr. and Mrs. R. P. Smith and family of Halifax have been spending a short vacation at Tidal Waters, Green Bay, Lunenburg County.

The people of the town and outside districts are feeling very gratified with the success of the first annual bazaar for the Annapolis Hospital. Its success was due to the one hundred per cent cooperation of the people in the district headed by a joint committee from the Hospital Commission and Hospital Ladies' Aid. Although the hospital has only been open for six months the enthusiasm of the people as to its need has been greatly aroused and with this spirit no hospital can suffer. Already having admitted well over two hundred people from almost every district surrounding the town its need has been clearly shown and its advantages brought home to everyone. Fully equipped in modern style it is a great satisfaction to those who bore the brunt of its establishment to have the unanimous cooperation of the people that it serves, shown as it has been, at the bazaar.

The BULLETIN extends congratulations to Dr. and Mrs. T. B. Acker of Halifax on the birth of a son, July 7th.

Dr. Helen C. Tulk, Dal. '38, the former Dr. Helen C. Spurr of Liverpool, N. S., and her husband, Dr. G. D. Tulk, Dal. '36, arrived recently from England on their way to Newfoundland where Dr. Tulk will assume a practice.

Dr. L. G. Holland, Dal. '35, has returned to Halifax from New York where he had been continuing his medical studies for the last five years.

The following doctors are now attached to the R.C.A.M.C. in the Canadian Active Service Force: Drs. R. W. Maclellan, H. D. O'Brien, C. E. Kinley, W. G. Morson, C. J. Macdonald, F. A. Minshull, H. I. Goldberg, and M. Jacobson of Halifax; R. D. Lindsay of Port Hawkesbury; A. S. Cowie and C. E. A. deWitt of Wolfville; M. J. Chisholm, A. D. McDonald, and A. A. Epstein of New Waterford; C. B. Archibald of Glace Bay; A. M. MacKay of New Glasgow; J. A. F. Young and R. H. Sutherland of Pictou; J. F. Nicholson and C. O. Walsh of Sydney; R. M. Caldwell of Yarmouth; W. MacIsaac of Reserve; C. G. MacKinnon of Bridgewater; J. F. Bates of New Aberdeen.

Dr. W. S. Gilchrist who recently returned from Angola, Portuguese West Africa, has been appointed to a commission in the R.C.A.M.C. with rank of Lieutenant.

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"And to-day the clear truth which puts all other things in shadow is this: Our little planet is now a great battleground on which two ideas or two sets of ideas—two philosophies—are engaged in a struggle to the death. Not that they face each other for the first time. They have met before on a thousand battlefields—nations against nations, parties against parties, blocs against blocs, man against man, individuals at war with themselves. But they are now met in a colossal struggle such as the world has never before seen, and the issue of that conflict seems to be in some final sense fateful for all mankind, fateful for us.

"Two ideas, two sets of ideas, two philosophies, meeting head on, what are they? On the one side is the Nazi *Weltanschauung*, which stands for the exploitation of human beings on a national and even on a world scale. It has no regard whatsoever for human life as such, not even the life of its willing or unwilling subjects. These have no rights, not even the right to live. They are of value only as they contribute to the power of the State. They are just so many cells in a vast organism. If they do not function, or are suspected of not functioning, healthily and loyally to the ruling power, they are cancerous growths which must be removed by ruthless surgery. They are to all intents and purposes slaves, whipped into step by a leader, alias a driver. There is no personal freedom. The only freedom is the freedom of the State to work its absolute will, and the will of the Nazi state is the will to war and conquest.

"That, stripped of its disguises and hallelujas, is one philosophy, one religion. On the other front is an idea, a faith, which is a slow and painful birth of ages of human aspiration and struggle. It is the revolutionary idea, or set of ideas, that man is not a means to an end, not something to be exploited by class or by state for wealth or for war, but an end in himself; that the highest of values on this earth is the value of free men, that the only morality, the only justice which is built on a rock is that which respects the sacredness of the human personality; that laws and institutions and states are made for him and by him, not he for them; and that the first business of men living together—the first business of the state—is not to coerce him under the despotism of a regimented mob for an ulterior purpose but to cherish and promote his individual freedom to grow in peace into the full stature of his being.

"That idea, which we name democracy, has never been realized in fact. Democracy is not an accomplished thing, not an established thing. Rather it has been a dynamic faith which has always had to do battle, and to-day with its back to the wall is battling for its very existence."

*Excerpt from commencement address of President George Norlin of the University of Colorado to the students of the University of Wyoming, in "Saturday Night", June 29th, 1940.

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Malaria Map May Change in Ten Years

A complicating factor in the problem of malaria control is the fact that the malaria map of the South may be considerably changed within the next ten years, as a result of both natural and man-directed forces. This point was brought out by Dr. Ernest Carroll Faust, of Tulane University, in his report to the recent meeting of the National Malaria Committee.

Doctor Faust has noted a marked tendency for the disease to spread from heavily malarious zones to adjacent territory, in which the malaria mosquitoes breed but in which the population is presumably less immune to the disease than it is in regions where malaria is always present.

Life insurance companies, Doctor Faust found from questioning their medical directors, consider malaria the only special insurance hazard in the South to-day, with the possible exception of pellagra. On the other hand, Doctor Faust pointed out, the rates for deaths from homicide, suicide, and other external causes are substantially higher in the South than in the nation as a whole.

About four out of every one hundred persons in the South has malaria every year, a total of at least 1,500,000 annual cases, Doctor Faust estimated. The disease fluctuates about every five to seven years, Doctor Faust pointed out. The last peak in deaths from malaria occurred in 1933-1934, since which time there has been an appreciable decline. Another increase may be expected in another year or two.

The most encouraging feature of the situation to-day, Doctor Faust said, is the greatly increased interest and activity of state departments of health in the development of full-time divisions of malariology for making county- and state-wide surveys of all aspects of malaria, with a view towards control of the disease.—(From *The Diplomat*, February, 1939).

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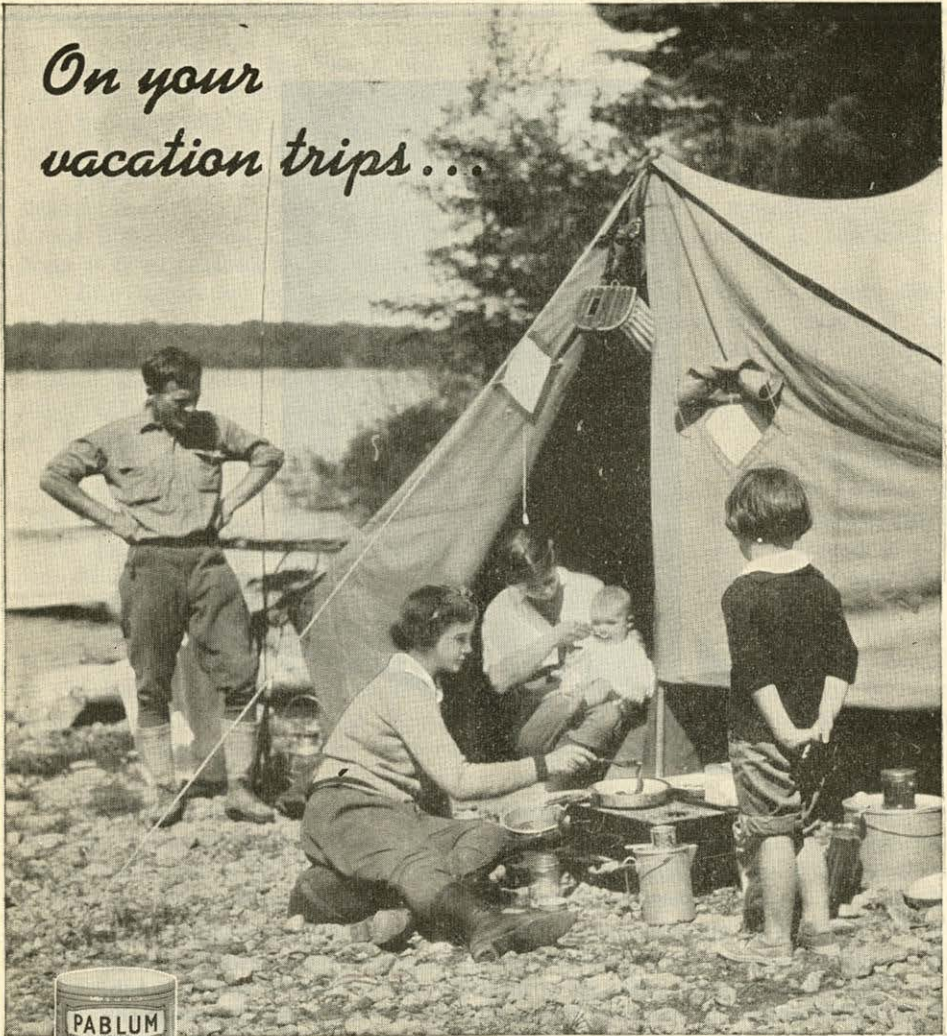
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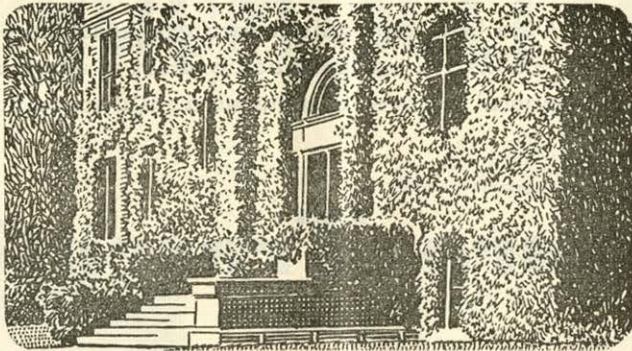
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Productive research is like building with brick—one fact or one experience is laid on top of another. The soundness of research accomplishments depends on the foundation underneath. You can't start building half-way up.

Parke-Davis contributions to modern medicine are familiar—among them are Adrenalin, Pituitrin, Pitocin and Pitressin, Mapharsen, Meningococcus Antitoxin. Each represents a single research project. Yet all are mortared together in a broad foundation of scientific understanding and experience. Every future Parke-Davis development will stand soundly on this structure.

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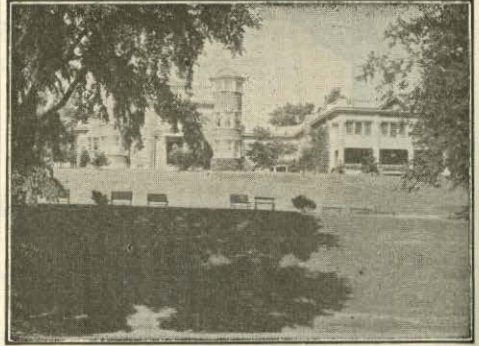
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