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The Canada Lancet

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EDITORIAL

THE ONTARIO TEMPERANCE ACT AND THE DOCTORS

We have frequently called attention to the Ontario Temperance Act and the attitude the doctors should maintain. We will venture once more to revert to this subject.

In the first place the Act makes all forms of alcohol containing liquors drugs, and places them under the control of the doctors. We have held firmly that the doctors always had this power; for it was always their right to prescribe alcoholic stimulants when they saw fit, as these stimulants are drugs and therapeutic agents. But the legislators took a short cut to get rid of the difficulty of arranging the way whereby people may obtain some liquor by passing an act setting forth that people can only buy when they can furnish doctors' orders. This was an act of rank injustice to the medical profession, and rank cowardice on the part of the legislators, who sought in this way to escape responsibility for finding some other plan of vending alcoholized liquors.

During the recent investigation of the liquor problem by the Special Committee appointed by the Legislature at its past session, a number of things came out in evidence. It was made clear the act was violated at times by those who had the control over its administration. This was admitted as necessary at times. Here we have proof that the act is faulty.

Then it came out in evidence that seized liquors were turned over to the vendors and sold for medicinal purposes. Just think of it! What guarantee could there be in such a case? Liquors may be tampered with in many ways. Liquors sold for medicinal purposes should be of the highest quality.

It was stated before the Committee that it should be made unlawful for a doctor to charge for a prescription for liquor. This would be abso-

lutely wrong, and quite useless. No matter what drug a doctor thinks his patient should have he is entitled to a fee for his advice, even to telling the patient he should "smoke" some for his "nervousnss". But such a change in the act would be evaded by the doctors giving general advice and ordering some other drug, and charging a fee for the "sèance".

The recent "books" issued by the Commissioners has the motto: "Medical Practitioner Patient." This is somewhat humorous. Everyone who has consulted a doctor, obtains advice, and is given a prescription for any "drug", is a patient, though seen for the first time, and may never be seen again. We candidly do not think matters have been improved by printing these words at the top of the prescription blank.

Let us see how some able lawyers and experienced judges view the matter. In *The World* for October 13th we find this:

"That the Ontario Temperance Act is a most unBritish piece of legislation was the comment of Mr. Justice Masten, in chambers at Osgoode Hall, yesterday, as he listened to the motion to quash the conviction of John Newton of Cobourg, who was fined $500 by Magistrate W. H. Floyd for having had liquor in a place other than his private dwelling."

Justice Orde in dealing with a case that came before him, in the form of an appeal from a magistrate's decision, remarked regarding the Act, that: "It's outrageous to my mind, but, of course, I am not legislation".

Justice Middleton in dealing with an appeal that came before him said in effect: "I am inclined to believe that there is an impression among magistrates that the Act has done much more than it purports to do. Section 88 shifts the onus of proof that accused had in his possession the liquor concerning which he is being prosecuted; but the Act does not abolish the fundamental principle that the accused is to be presumed innocent until guilt is proved, nor does it take away the right of the accused to the benefit of the doubt."

Mr. J. E. Jones, recently appointed assistant Police Magistrate in Toronto, expressed his opinion on the bench as much opposed to section 88, "which puts the onus of proving innocence on the accused person".

On page 95 of the Announcement of the College of Physicians and Surgeons of Ontario, we learn that a judicial opinion has been given that if a doctor is prepared to make a declaration to the effect that his prescriptions for liquor are always for medicinal purposes, no limit can be placed upon the number he may issue. This is law at present.

All this goes to show that the state of affairs is very unsatisfactory. We would urge upon the medical profession, through its properly constituted medical association to urge that the Act be amended so as to place the medical profession on a proper footing. There should be some other way found whereby those who desire to obtain some liquor can do so without first securing a doctor's order. There are ways by which this can be done. The government could issue permits to persons to purchase a certain amount.

Under such a system the doctors of the Province would cease to be a compulsory body of bartenders; and would be once more therapeutists, ordering liquor when it was required, as they do in the case of all other drugs. It remains to be seen how much backbone there is in the medical profession in this matter. It is for it to say whether or not it shall be freed from the ignominy of being made to fill a most unenviable and unfair position.

MEDICAL EDUCATION IN TORONTO

For sometime there has been a good deal of rumor afloat that there are important changes pending. It is now known in what direction some of these changes are tending.

One is that a *few*, and we emphasize the word "few", are to be whole time professors, and a *few* others are to be part time professors. The whole-time and the half-time professors are to be paid.

Then another change is that all the other teachers are to have no status of any moment. They are just *clinical instructors*. They are to give time and thought, and receive no pay for the same. They are to receive no promotion or pay, and, maybe, no praise.

We do not hesitate to voice the opinion that this plan will not work. Good men will not work under such a system; and they would be foolish if they did. It will create dissatisfaction, friction, lack of interest in the work, and a marked falling off in the loyalty of the *unpaid* members of the teaching staff. Further, it must come true that if some will give "free" clinical instruction they will only do so for a few years. As soon as their time becomes more valuable in their own practices they will drop out; and at the time when they are most required because they have experience both as teachers and practitioners.

There is another feature of the teaching of medical students in Toronto that we challenge. There is too much laboratory work. The great foundations for medical education and medical practice is, and

must ever be, the study of anatomy, physiology, pathology and clinics. The laboratory has its place; but its place is that of research, or the finding of paths for the medical profession. This is not, however, for the student. The time of the student should not be taxed too heavily with the study of bacteriology and pathological chemistry. It is known and must be admitted that a doctor may be well qualified to treat a case of typhoid fever without a study of the bacillus typhosus, or to remove the appendix without long training in the various cocci.

Then it is proposed to lay down a rule whereby any one over thirty years of age may find much difficulty in entering upon the study of medicine. We agree with the view that it is not wise for persons of such age to take up the study of medicine, but this is advice and should remain at this stage. The University is a provincial institution, and receives large sums of money from the Province, it would therefore be a question whether the university could refuse admittance to any citizen of the province because he or she is over thirty years of age. If the attempt should be, the practice would soon reach the political arena and become an apple of discord on the floor of the legislative assembly.

PROLONGED FASTING.

From time to time cases of prolonged fasting have been reported. In some of these there is an element of doubt as to the genuineness of the fasting, a feeling prevailing that some form of nourishment had been taken. But in the midst of all this confusion there are instances of real abstention from material nourishments over long periods.

Many years ago we read an account given by the late Sir W. T. Gairdner, of a young woman who fasted for forty-two days in a state of trance.

Dr. Tanner fasted forty-one days in Koster and Bial's hotel in New York. Every precaution was taken to make it certain that he was not receiving any food or nutritive liquids. He drank water freely. He came through the ordeal well.

Richard Tansel, of North Dakota, fasted for seventy-eight days, with the object of reducing his body weight. He succeeded in doing so from 385 pounds to normal. He lived.

Ann Moor, of Tutbury, England, went on fast to cure some disease on November 4th, 1806, and fasted till July, 1809. The last solid food she took in small quantity was in January, 1807. She died of her illness. Dr. Robert Taylor, a member of the Royal College of Surgeans, gave a very full account of her case.

George Davis, a patient of Dr. Dewey, fasted for 61 days, reducing his weight from 228 to 174 pounds. He declared he felt well and had cured himself of his paralysis.

George W. Tuthill, of Minneapolis, fasted for forty-one days. When through he weighed 72 pounds. He declared he felt very well and enjoyed good health afterwards.

William Grainer, in 1831, was condemned to be guillotined. In order to escape this form of death, he went on hunger strike, Dr. Socquet states that he succeeded in starving himself to death on the 63rd day. This occurred in the Toulouse prison.

Merlatti starved for forty-eight days and lost one-quarter of his weight. He did not die.

Taylor records the case of a miner who was imprisoned in a mine for sixty days without food. He lived for three days after his rescue, his death being due to overfeeding.

Michael Fitzgerald, died on 17th October, 1920, in Cork jail after a fast lasting for sixty-seven days. He had refused food of all kinds we are told.

Terence MacSwiney died on the seventy-third day of his hunger strike. The statements were frequently issued that he was partaking of no nourishment, though some statements admitted that he had taken some fruit juice, or meat juice.

Joseph Murphy, one of the ten on hunger strike in Cork jail, died on the same day as Terence MacSwiney, on the 73rd day of his fast.

The remaining eight in the Cork jail were ordered by the Sinn Fein to break their fast, which they did by taking some liquid refreshments on the 94th day of fasting.

These cases go to prove that man may fast for much longer periods than has been generally thought possible. Taking the recent Irish hunger strikers along with other cases of starvation on record it is just possible they put in their fasts without food, or on very little. In the cases of those who continued their fasts for 94 days there is strong reason for doubting the completeness of the fast. There is undoubted evidence that Terence MacSwiney did have a slight amount of nutriment; and it is almost certain the others had also, especially the eight who lived for 94 days, and made a good recovery on the resumption of a proper dietary.

Summing up the whole case, we do not believe the fasting in any of these Irish cases was complete. In the cases of MacSwiney, Murphy, and Fitzgerald, it had been carried to too extreme a limit, and they

perished. The medical scientists will look forward with expectancy to any statement of an official nature which the prison authorities may see fit to make.

FAITH HEALING

We again return to this subject because it is of the utmost importance. If faith can heal, as different from mere suggestion, there should be some way of determining the matter. The press despatches of November 14th, 1920, gives the following.

"Baltimore, Nov. 14.—So ill from arthritis that she was unable to walk without assistance, and after physicians had declared they could do nothing to help her, Mrs. M. J. Gillies of Toronto, Ont., sister of Jerome H. Joyce, owner of the Hotel Joyce, in Baltimore, was restored to strength at a public novena, at the Carmelite Monastery at Wheeling, W.Va. Word of the miraculous cure has just been received by the Joyce family here.

"Mrs. Gillies had been ill since last January, and when taken to the monastery was in such condition that it required 45 minutes for three persons to conduct her up the stairs to her room. When the novena, which is conducted annually in honor of St. Teresa of Jesus, Seraphic Mother of the order stated, she was taken in an invalid's chair to the chapel.

"After Thomas A. Judge, Vincentian missionary, who conducted the ceremonies, blessed her with the relic of St. Teresa, according to the Joyce family, Mrs. Gillies arose to her feet and walked without assistance declaring she had recovered."

Now, we wish to be quite frank and state that we do not believe that any real cure occurred at all. Many persons think they are much worse than they are, and under strong emotion they think they are very much better than they really are. Thus a person may feel some pain, and by introspection and dwelling upon it their condition becomes markedly exaggerated. They then come under some influence that makes a strong impression upon their minds, and they declare they are feeling very well. This is well-known. In a moment of excitement a person may be severely wounded and not realize it at the moment. We are here dealing solely with suggestion. It is the same as the paralytic spoken of by O. W. Holmes, who in an excited moment got up and walked quite well. Such an event could not occur in organic paralysis.

In *The Telegram* for October 25th, 1920, we find this item:

"Committee appointed by the Rural Deanery of Toronto for the purpose of conducting the mission of healing at St. James' Cathedral in June last, have reported that there were 1,402 persons who received the laying on of hands by Mr. James Moore Hickson.

"Of the total number there were 709 Anglicans, 123 Presbyterians, 142 Methodists, 43 Baptists, 9 Roman Catholics and 58 others of denominations not specificed.

"There were a total of 1,231 enquires sent out, 685 replies were received from these. The results of the investigation are 53 cures, 152 cases of great improvement, 184 cases of noticeable improvement and 304 cases of no improvement.

"Of those replying 56 per cent. testified to having received some definite bodily blessing through the mission."

If one looks at the foregoing a number of points loom up at one. In the first place there were 1,402 treated by Mr. Hickson.

There were 1,231 enquiries sent out, and 685 made reply. That is 546 did not answer. Of the 685 who did answer there were 53 cures, 152 greatly improved, 184 noticeably improved, and 304 not improved. This we regard as a very poor showing.

Why were there so many unimproved? Take the total number of 1,402, and we find 53 cures, 336 improved to some extent. This leaves a balance of 1,103 that made no reply or admitted they were none the better for the treatment. Does faith limp in this fashion? Can it not cure all cases? Or can it only cure some mild ailments and fail in the hard cases? Or does it depend upon the recipient of the treatment?

But the report from the Committee is absolutely unconvincing, because the cases were not examined before and after treatment by competent observers to ascertain the real nature of the disease; and also how far the cures claimed are really cures, and if there was anything to cure. We would wish to know also what the improvements amount to. They may be in the class of the partially blind girl described by Dr. Tweedie, the eminent eye specialist. She was tested by him and her vision. She then went to some faith healer, and declared she was greatly improved. Dr. Tweedie then, again, examined her, and found her range of vision exactly the same as before the visit to the faith healer.

On former occasions we suggested that those cases treated by Mr. Hickson should be subjected to a full and exhaustive study by a committee of competent persons. On the committee there should be authorities on the various forms of disease, such as general medicine, general

surgery, nervous diseases including mental vagaries, and eye, ear and throat specialists. There should also be an orthopaedist.

Nothing short of this will carry any weight. We fail to see why those who had to do with the advent of Mr. Hickson have not adopted this course. If disease can be cured by faith there should be no trouble in furnishing the proof, and all should rejoice to do so. We again ask for a complete body of examiners.

OXFORD UNIVERSITY AND GERMAN UNIVERSITIES

Some time ago the University of Oxford opened up the subject of friendly relationships with German Universities. The latter made the following reply:

"Science knows only one aim—the search after truth—and it requests for the performance of this task the common labor of all, regardless of national boundaries," says the German reply. "The war interrupted this joint labor and dissolved many personalities. We are ready to resume these connections and by common labor to relegate to oblivion everything offensive spoken or written in both camps."

Just think of the intellectuals that signed the defence of the actions of Germany in the war sending such a message! We have seen no evidence of repentance that would justify the University of Oxford negotiating with the Universities of Germany. If we can judge rightly the only thing in all the war that the authorities in Germany regret, and this includes the University men, is that Germany lost the war; or in other words that she could not perpetrate enough brutalities and horrible things to win it. We feel that humble requests should come from Germany first.

CHIROPRACTIC PATHOLOGY.

A "chiropractor" of Waukesha, Wisconsin, emits (at advertising rates) the following words of wisdom on the pathology of gallstones and kidney stones:

"Gallstones are due to an excesive amount of heat in the gallbladdr which crystallizes the calcareous material in the bile and forms stones. This excessive heat results from the loss of calorific or heat control of nerves due to nerve pressure in the middle dorsal vertabral region. Adjustment of the causative subluxation restores the condition to normal. Renal stones are caused in the kidneys in the same manner.

ORIGINAL CONTRIBUTIONS

SOME OBSERVATIONS IN SURGERY.*

By M. Benmosche, M.D., Detroit, Mich.

THE usual pilgrimage of the American profession to the shrine of European clinics which the great war halted, is again resumed with a newer interest and an altogether different emotion. The knowledge gained from military surgery is strongly reflected in the surgical amphitheatres all over the world, and particularly abroad.

It is a pity, we have to admit, that from such a colossal catastrophe the slow strides of surgical progress have to take place. If only one per cent. of the wars' expenses and concerted human efforts were devoted to the altruistic work of medical and surgical scientific research, the results and achievements would be more complete, more gratifying, and along lines that would bring to civilian sufferers the greatest good. This observation is, however, bordering on the social tragedy of life—the gruesome farce of human relationships, on which I am neither prepared nor inclined to dwell.

Leaving home for an extended journey always involves a certain amount of preparation, which one finds to be directly in proportion to the distance involved, the countries to be visited and the length of time the whole is expected to take. Apart from preparing for one's personal comforts, so essential on the way, the unseasoned or infrequent traveler, finds that he has a rather erratic or somewhat ungovernable factor to prepare or adjust, namely, his mental or emotional attributes. An old "home bird", as I am, breaks away with some difficulty—with much pulling at the heart strings. I grant you there are myriads who pray for such an opportunity to escape, and barely cross the threshold of their cage, before they break loose into the wildest orgies of so called delights of freedom. I can say, thanks to the delights of my home and the sincerity of my friends, that parting was no easy matter. And if going abroad does nothing else than concentrate for a moment the love and friendship that one has engendered through a period of years, then going abroad is wonderously worth while.

Visiting foreign countries these days is a totally different thing to what it was in anti-bellum days. Those of us who travelled before the war were blissfully unappreciative of the freedom and ease and pleasure with which our journeys were undertaken and consummated. No passports, no vises, no sailing permits, no income tax receipts, in short

*Read before the Maimonides Medical Society.

nothing to make you feel the restraining hand of authority; nothing to make you feel the individuals insignificance in the monstrous machinery of nations, and nothing to make you feel that all the world is composed of foreigners, except in the difference of tongue. This the war has done, and woefully more.

Getting a passport is a comparatively simple matter, if you can make friends with one of the Deputies of the United States Court, if you can write English, if you are a citizen of the United States, if you have as a friend, an old established American citizen, who will swear that he knows you for better or for worse, as the case may be, for a number of years, and if you have a good enough reason for going, which reason must be passed upon by our Washingtonian authorities before it is settled as "good enough". If you have all these prerequisites, and a genuinely good American dollar to spare the authorities for their trouble in making out your passport, and you don't mind waiting at least two weeks in more or less of a state of suspense, the probability is you will get your passport, which after all is but the first rung on the ladder of your nomadic ambitions.

After having, however, overcome your difficulties, found yourself comparatively comfortable on the transatlantic liner, you can prepare yourself to be compensated by the incomparable joys and occasional distresses of a long ocean journey. Personally not being able to lay claim to the distinction of being an extraordinary good sailor, I experienced in the beginning somewhat more of the distresses than the joys. You must not infer from this that I was lonely. My company was quite numerous and equally as pale. In the midst of my discomforture I was reminded of Byron's ode to the ocean, "Roll on thou deep and dark blue ocean, roll", and out of sheer malignity struck off this parody of it:

> Roll on, thou rocky, reckless vessel, roll!
> Ten thousand men get sick upon thy decks;
> At most times, men, their stomachs can control—
> Not on thy decks. Upon thy rolling boards
> The sick lie scattered prone. Nor doth remain
> A shadow of his will power, save that bit,
> When for a moment he can swear in vain,
> And sink upon thy chars devoid of grit,
> Without a smile, unhelped, unpleasant, and unfit.

All the London hospitals are quite busy. On the one hand with the large amount of clinical material and on the other with the ponderous task of getting means and facilities for taking care of their sick by extensive campaigns for voluntary contributions. English hospitals are mainly supported in this manner.

At the time of my visit the London Hospital, which boasted of 180 years or more of inestimable work, was seriously contemplating closing its doors because of the tremendous falling off of its voluntary contributions since the war. It is claimed that governmental taxation is so high now, that philanthropy is strangled.

The London Jewish Hospital, located in the heart of the East End, is nearing completion. It is quite a large building, planned to accommodate about 150 patients.

Several of the London hospitals have Jewish wards, and Jewish diet kitchens, and it was only after a great struggle, in the face of many obstacles that the East End Jews were able to carry out their dream of years.

London is going to be the mecca for American surgeons for many years to come, and I believe that time is rapidly ripening when English and American surgeons will find themselves more closely bound in scientific, and ethical concord.

On a visit, one naturally will attend the clinics at as many hospitals as his time will permit, but it is quite understandable that one's Alma Mater lays greater claim to one's interest, and loyalty, and so the best part of my time was spent in the several amphitheatres of the old Middlesex Hospital.

Abdominal surgery was my greatest attraction. It was interesting to note the difference of opinion, and the varieties of experimentations practised on patients with regard to the sterilization of the skin surface. Some of the men are still using plain soap and water, and bichloride washes, followed by bichloride compresses applied a few hours before operation. Others again are using the method that is so prevalent in American hospitals, namely, soap and water washes, swabbing with benzine, drying, and the final application of a 7% iodine, with, or without a final swabbing with alcohol. Then we have men who are striking out into newer territory is asepsis. Instead of iodine, a mixture of methyl violet, and brilliant green, is applied by compress at least six hours before operation, the compress is removed in the operating room at the time of operation.

It gives the skin a deep blue, or bluish black appearance, which appears to differentiate the surgical field, from the surrounding areas and has a tendency of resting the eye during the work; it is claimed that these analine dyes have greater anti-bactericidal properties than the official tincture of iodine, with the additional advantage that it does not tire the eye. This method must be the bane of the nurses' existence

in the amphitheatres where it is used. It is frightfully messy—staining, and blotching everything that comes in contact with it.

The older men are very cynical about it, and at this juncture I am reminded of an episode that has made an indelible impression on my mind.

It was the last official operations performed by Sir John Bland Sutton, the distsinguished English pathologist, author, and surgeon.

At the age of 65, all surgeons cease to be officially connected with the hospital, and a day is set aside when the retiring surgeon officially performs his last operation.

The amphitheatre was crowded with celebrated English medical men. The patient was brought in, followed by little, dapper, Sir John. Everything in the surgical pit was spick and span, and perfect quiet prevailed. There was no ripple of applause; there was no murmur of excitement; no display of emotion whatever. The patient was uncovered, and it was noted that the abdomen was already painted with iodine, and fully prepared. The case they had selected for this occasion was that of a very large ovarian cyst. Sir John remarked that he had seen the case the day before for the first time. Then he had diagnosed an ovarian cyst springing from the left side.

He noticed that the abdomnal distention was not as marked as it was the day he had diagnosed it. He suggested a possible leakage of the cyst, in which case the prognosis would be somewhat graver than if this had not occurred. The patient was placed in Trendelenburg the abdomen was opened and found to be well filled with a dark, heavy fluid, corroborating Sir John's diagnosis.

Then we had a lecture on ovarian cysts, the dangers of rupture and leakage due to one cause or another, laying particular stress on malignant degeneration of the walls of the cyst, giving rise to leakage.

This discourse, carried on during the operation, would have done credit to any of our greatest pathologists, concentrated on a lecture and not subjected to the diverting influence of a difficult surgical feat.

It was an experience I can never forget. The operation over, the patient was removed, and Sir John walked out of the amphitheatre without a word, either from him, or from his audience. Not the slightest indication that anything unusual had occurred, without emotion, without the slightest ripple of excitement. I felt like clapping, and yelling for a speech, bubbling all over with excitement hard to suppress, and I have no doubt that every man present felt as I did. But that is the way of the English. Great events come and go, and cold reason carries them over the crest of the excitement.

W. S. Handley, the well known authority on tumors of the breast, performed a number of operations during my stay there. His latest wrinkle is not to close the skin wound completely, but leaves a large gap to granulate over, and he is not at all concerned about the size of the gap.

Comyms Berkley has a disconcerting habit of trying to do abdomnal hysterectomies in les sthan fifteen minutes. He has a fiendish way of looking up at a big clock, and remarking, if it was a minute or two longer than he wanted to be, 'Well, that is not so bad, I pretty nearly made it", and then the boys laugh.

I believe we are under the erroneous impression that American surgeons are more skilful, and quicker than English surgeons. This is not true, and if you do believe it, a trip abroad will disillusion you.

In Paris, Drs. Labey and Faure are just now the surgical rage. They are the foremost gynecologists, and it is a pleasure to watch their work. All surgeons have their own wrinkles, facial, or otherwise, but Labey at the hospital Cochin, has a surgical wrinkle which gave me several facial wrinkles.

He does his perineorrhaphies very much after the Montgomery type, but in closing his perineal wound, he uses a very heavy twisted bronze wire, inserting 3 or 4 or more sutures strongly twisted, very much like a lineman will twist a heavy electric wire in place. This bronze wire although being soft, and pliable, is fully 1-16 of an inch in diameter. It looks brutal to leave these wire sutures in situ, and I still have enough human sympathy left to feel a nasty twist somewhere in the neighbourhood of my semilunar ganglion, when I picture to myself the cruelty of removing them.

I regret that I am unable to crowd into the limited space of a single paper every interesting detail of my observations abroad.

Those of you who will in the near future take an European trip will see for yourselves at every turn the earmarks that the great war has left on surgical work, and surgical thought.

To me it appeared as though the sum total of surgical achievements resulting from the war, could be classified under three distinct heads, namely: Asepsis, Plastic surgery, and Heroism. The latter classification may sound cynical, but it is not. Heroic surgery engendered and developed by the horrible mutilations of the human body by up-to-date weapons of destruction, and the exigencies of the modern battlefield, occupies a definite position among the records of surgical progression and to possibilities that have hitherto been considered too radical and impracticable.

MEDICAL JOURNALS AND THE CAMPAIGN AGAINST CANCER.*

By Frank J. Osborne,

Executive Secretary, The American Society for the Control of Caner.

RATHER a large order and one which should be neither adulterated nor shortweighted. The campaign against cancer is all that the name implies. It has been, and for years to come will be, a battle. A fight against gross ignorance and traditional fear and hopelessness on the part of the lay public and no small skirmish against a degre of lethargy existing even in the medical profession. However, we have been told that battles are lost in the same spirit in which they are won by real fighters and we must therefore maintain a hopeful and aggressive spirit in our efforts to overcome this, one of the most difficult of all medical problems, if we hope to make any eventual headway against it. It is true that our present day methods of treatment hold out very little hope in advanced or late cases of cancer; but it is equally true, that recognition of early symptoms and immediate competent treatment justifies a most sanguine attitude and really gives hope of ultimate sussessful treatment of the majority of cancerous and precancerous conditions. This is the message which the American Society for the Control of Cancer has atempted to propagate during the six years it has been in existence, and those who have been in a position to observe and who have kept careful records of progress claim that results are now beginning to manifest themselves; some stating that as high as 80% of successful cures could be obtained in certain areas, if the patients would but present themselves for treatment early.

Having its birth, as this Society did, within the medical profession in response to a resolution adopted by the American Gynecological Society and endorsed by the Congress of American Physicians and Surgeons in 1913, it has enjoyed the closest cooperation from the organized Medical fraternity and its official journals. From the very first it was recognized that the medical publications of the country constituted one of the most powerful agents for the dissemination of cancer control information to the profession and it is a pleasure to be able to say that this coporation has continued and advanced during the past years. Hardly a month goes by that some cancer paper or editorial does not appear in these journals, and it is worthy of note that even though the paper itself may

*Read before the Fifty-first Annual Meeting of the American Medical Editors' Association at New Orleans, April 27, 1920.

make no mention of the national campaign being waged against this disease, the discussion which follows almost invariably brings it out and stresses the point that eventual success lies in impressing upon the public the necessity of prompt and intelligent action and upon the profession the necessity of equipping itself to render effective service in the way of diagnosis and treatment when the patient presents himself for advice. The latest evidence of cooperation between your journals and this Society was the way in which you made known to your readers the existence of the new Handbook prepared especially for the medical profession setting forth the latest and most approved methods of handling this disease. The announcement which went forth in your columns resulted in innumerable requests for this booklet and has been a source of encouragement to the Society and a full recompense for the time and energy devoted to its preparation.

I should now like to be a little more explicit and attempt to indicate, with your indulgence, certain ways in which medical journals can greatly increase this valuable cooperation and be even more useful as a medium of suggestion and education to the medical profession and through it to the general public. The policy of the Society has been, to have State Medical Societies appoint permanent cancer committees. During this six-year period twenty-one such Societies have done so. Many of these committees, however, flourished for only a short time after their formation and have now, with a few notable exceptions, either become inactive or have ceased to exist. In urging the appointment of these committees the Society has always stressed *permanency in office* because of the fact that cancer is a disease which is constantly present in the population and one against which only continued efforts of education can make any impress. It is therefore felt that such committees should be composed of a few carefully selected men upon whom should be placed the duty of organizing and carrying out a thorough-going and persistent system of attack which could not be so well done if the personnel of these committees was constantly changing. Having gone this far, however, the Society is, by the very nature of the case, compelled to stop. These special cancer committees, appointed in most cases merely at the suggestion of the Society, are not of it, and not subject to outside dictation or even suggestion. But it is self evident that the editors of medical journals are in a position to greatly assist both this Society and these committees. The readers of these journals always read with interest and due respect suggestions coming from the editorial desk. Such recommendations as might be editorially offered, would certainly

receive far more consideration coming officially, than if they came from an organization such as the Cancer Society, which at best would be non-official. Medical editors by taking an active interest in the organization of such cancer committees, could largely shape the make-up of such bodies. It would be simple to show why such committees should be permanent as to tenure and composed of men carefully selected for their prominence, interest, energy and sanity. The appointment of such cancer committees is a matter of no small moment and if the efforts of the members are to result in anything worth while in the cancer control campaign they should be most judiciously chosen. The whole success of such a movement often depends upon the character of the appointees on such committees.

Having shown your subscribers the way to organize such committees may I invite you to go one step further? It is a well known fact and one which simple observation in almost any direction will verify, that many committees, even though well chosen and organized, drop off into a state of coma or actually die of inanition. As a rule such committeemen to be really useful are busy men. They cannot be expected to devote a great deal of their valuable time to work even of this highly humanitarian nature. Medical editors might well consider themselves in the nature of Executive Secretaries. One of their normal functions is to stick pins into slumberers and to make first suggestions. It is often easier for any committee or organization to work a plan than to plan work. By virtue of his office the medical editor is in the best possible strategic postion to sustain interest and get action. He is in the vanguard of the medical movement. He is in possession of all tried and proved methods of the public health and preventive medicine campaign. It is not new for him to outline programs of activities and with the added facility of presenting such programs in an appealing and forceful manner results would be bound to follow. In this way he would take the burden of this fundamental work off the shoulders of the committee which would result not only in conserving their time and energy but in giving them the latest available information as to how to prosecute this particular educational campaign. It is realized that some committees are so blessed with specialized talent or lead by a chairman so well equipped with organizing and campaigning ability that such service from medical editors would not be required. On the other hand it has been our experience that no matter how efficient and successful a committee may be, there will come a time when its activities will lag

and its effectiveness begin to wane unless stimulated from some outside but closely cooperating and helpful agency.

While not assuming to have perfected any such program of activities for use by medical editors, it might not be amiss at this time to suggest a few of the more obvious lines of attack in order to block out roughly the scope of work with which such a committee might properly interest itself. Its first attention should, of course, be directed to the official medical organizations in its state and in view of the fact that education of the profession should go hand in hand with that of the public, we would place equal emphasis upon both phases of the subject. In order to indicate how this end may be attained, I would call attention to two activities recently carried out by cancer committees of State Medical Societies. In Massachusetts, by co-operating with the State Department of Health, the Medical Society secured the distribution of the new handbook for the profession entitled "What We Know About Cancer". This is a most fundamental piece of professional education. The booklet is brief, readable, authoritative and suggestive. To have placed it in the hands of each medical man in this state is a distinct service and one which is most heartily appreciated by the Cancer Control Society, and will no doubt go far in our educational campaign. As a parallel to this educational work in the profession the Cancer Committee of the Ohio State Medical Association has sjust conducted a "Cancer week" throughout that state. As a preliminary to this campaign a series of meetings was held among County Medical Societies and Academies of Medicine on the subject of cancer. The State was then divided into eleven districts each with a supervisor to manage the details of the campaign. A large number of qualified medical men were appointed as lecturers to address lay audiences, and two hundred and fifty of the lecture outline prepared by the National Society were provided in order that these lecturers might present the subject in a uniform manner. The "week" was started with a "cancer Sunday", on which the subject was brieèy presented from the pulpits in the various churches and during the ensuing seven days the speakers addressed groups of women's clubs, welfare organizations, chambers of commerce, rotary clubs, and others. These are concrete instances indicating how well such cancer committees can function when properly guided. The chairman of these two committtees are to be congratulated for their efficiency and it is hoped that they will continue the work so well begun. Another useful suggestion would be that each local medical organization whether a county society, or academy of medicine be urged to devote at least one meeting each

year for its own members to a discussion of cancer and hold at least one public meeting on the same subject annually.

Somewhat removed from the medical organization group but still intimately connected with it are hospitals and dispensaries; and nursing organizations and training schools. Posters and placards on cancer should be prepared for bulletin board display in these institutions and every effort should be made through medical staffs or hospital superintendents to include cancer control in the lecture course for pupil nurses. All such schools should be supplied with special literature prepared for nurses ;and nurses' associations both state anl local, should be encouraged to provide speakers on the subject at their various meetings. Red Cross and all Public Health nurses as well as industrial nurses, should be supplied with the same information through lectures and pamphlets.

Another suggestion which medical editors might bring to the attention of chairmen of cancer committees is to interest the members in bringing the latest supplementary cancer control information to students in medical schools and colleges. Special stress should be laid upon giving due atention to instruction of students in the recognition of precancerous conditions. Our present day knowledge indicates that the best hope of preventing cancer is to inform the public of the predisposing danger signals and to educate the profession to recognize them as such. If it be true that our best hope of controlling this disease lies in acquainting the younger generation with these facts, it is equally true that complete success implies that no medical man should enter upon the practice of his profession without a thorough knowledge of all diagnostic procedures.

Three other agencies whose major interest is strictly professional are Public Health Associations, Health Centres, and Industrial Physicians and Surgeons. All these groups are doing most valuable preventive medicine work. Each is brought in intimate contact with numberless people who require instruction and no cancer committee can do a thorough job of professional education on the subject of cancer without enlisting the cooperation of these groups.

After having completed this part of the program which has to do specially with work through professional or quasi-professional bodies, (or rather while keeping step with this part of the program as was done in Ohio), the committee should include in its activities further educational work with groups of lay or non-professional organizations. A suggestive campaign of this nature has just been completed by the Colorado State Committee for the Control of Cancer: During the last

few weeks of 1919 the Committee's lecturers delivered twenty-two talks on the subject of caicer control which were heard by about 4,000 individuals. Aside from one before the State Medical Society and another to hospital nurses, the following audiences were addressed, which shows the diversity of the public reached: The State Federation of Womens' clubs, employes of five department stores, employes of three industrial concerns (one a group of 1,300 miners), the State Educational Association, State Librarians' Association, and State Congress of Social Workers, a Ladies' Aid Society, one church congregation, and a Parent's Association in a high school. This indicates the types of audiences which may be addressed to advantage upon this subject and when we add to them, chambers of commerce, manufacturers and merchants' associations, trades councils and unions, ministerial and other clerical groups, fraternal orders, Y.M. and Y.W. C.A.'s, civic and study clubs, all of which have been used from time to time as mediums through which to disseminate the hopeful message of cancer control, we begin to grasp something of the immensity of the work before us and to appreciate that the word "campaign" is most aptly chosen.

I have left for the last the consideration of one of the most important if not the most important and useful of all cooperating agencies through which such a cancer committee can operate. I refer to the public health departments, state and local. Having been a health officer myself, I am cognizant of the misunderstandings which sometimes exist between the organized profession and these official departments. This is not the place or the time to even sketch the underlying causes of this unfortunate situation. It is enough at this time to state that in the fight against cancer the state medical societies and state and local boards of health should work together as a unit. With the prestige and funds which well organized and well supported health departments can command, no chance for cooperating with them should be lost. Through their regular publications, exhibit and lecture bureaus as well as through their nursing staffs, demonstration clinics, health centres, etc., a unique opportunity is offered for the most effective kind of team work. It is not difficult to show to boards of health the desirability of such cooperation when the possibility of cutting down the death rate from this disease through intensive educational methods is properly presented.

One last word, and that, one in which I am sure the eeditors of medical journals will entirely concur. In making suggestions for carrying out a program of activities, particular stress should be laid upon the desirability of free use of printer's ink. After all it is the general public

that the majority of meetings are designed to reach. Success in the control of this disease can be said to be in direct proportion to the number of persons who have been persuaded by the dissemination of information to give immediate attention to suspicious symptoms. The medical man is the one who must prepare and deliver the facts, for only he has them. He should then be assured the widest possible hearing and his audience can be increased many fold by a well organized and smooth working press bureau which will see that his address is digested and reprinted in the public press. Where one hears the lecture hundreds read th papers. If the information is valuable for people to hear it is equally valuable for others to read. A sub-committee on publicity is, therefore most essential.

I will now leave this matter for your consideration, feeling sure from the experience of the Society in the past that this additional assistance on the part of medical editors will strengthen the bond of co-operation existing between your Association and that which I represent. As an example, I may cite the splendid results of propaganda publications prepared and distributed for popular use by the American Medical Association, some of them in cooperation with our Society. I appreciate that for medical editors to take up this work means a new line of endeavor, and I rescognize the difficulty of taking the first step in a new venture. However, I can assure you that if entered into with the spirit which the importance of the service meritts there is no one thing which medical pournals could undertake which would so far advance the campaign for the control of this disease. You may feel sure that the American Society for the Control of Cancer is most anxious to assist in any way in which it may be privileged to do so.

SHOCK AND ITS ALLIED CONDITIONS.

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Introduction

THE wide use of colloids as chemo-therapeutic agents, the fact that it is often necessary to administer them intravenously, the number of animals I lost at first while experimenting with them, and the alarming symptome which may occur in man after an intravenous injection of any colloid, have made me pay particular attention to this subject. This

article, then, is about a subject which has gained great importance of late, but one which has never been viewed from the standpoint here taken. From the experimental work undertaken with all kinds of colloidal preparations during the last few years, I have been led to the conclusion that anaphylaxis and shock are the same. I cannot help feeling, too, that the rationale of shock is the same, whether caused by hemorrhage, narcosis, or an intravenous injection of a colloid. I therefore propose to open the subject by reporting a case which strongly supports such a view.

The patient, a medical man, aged 34, had his first bad attack of hay fever in 1904. From then onwards he had frequent attacks. After some years he ultimately discovered it was due to horses. If he approaches a horse, rides one, or even drives in a carriage, he always develops a violent attack of hay fever. He has found that nothing else, except contact with horses, will bring on an attack. This always begins in the same way: the eyes become bloodshot, watery, and itchy, then a cough sets in; mucus pours from his mouth and nose; and sometimes asthma occurs. In March, 1916, the patient had a sore throat, for which he had one injection of diphtheria antitoxin (6.000 units). In a minute or two the eyes became red and itched, his tongue and lips swelled, and he quickly found he could not breathe. A few minutes later he went black in the face from asphyxia. In other words, the patient had a typical attack of the pulmonary form of shock, owing to the horse-serum content of the antitoxin. This attack of pulmonary shock was only an attack of "hay fever" accentuated. After a time the patient recovered, although those around him thought he was dead. In April, 1916, I gave the patient an intravenous injection of intramine, which had not been sufficiently protected. After 5.0 c.cm. had been injected, the patient suddenly developed the peculiar condition of the eyes above described; a violent fit of coughing ensued, and the patient said he felt exactly as he did after the antitoxin injection. Although the symptoms were mild, they were typical of the pulmonary form of shock. As the proteins used for protecting intramine do not come from the horse, and as the shock produced by an insufficiently protected colloid is the same as that produced by antitoxin, it seems reasonable to infer that shock and anaphylaxis are synonymous.

History and Modus Operandi of Shock

The word anaphylaxie was invented by the French physiologist, Richet,[1] who was the first to study the phenomenon. He found that, from the tentacles of the sea-anemone, a toxin could be prepared, which caused

intense vascular congestion in the viscera of dogs, leading to death after some hours. He found, too, that if the dose given was too small to kill the animal, a second dose of only one-twentieth the amount of the first produced serious symptoms which resulted in death. It was necessary, however, that a certain minimum number of days—eight to twelve—should elapse between the two injections. If the second injection was given three or four days after the first, severe symptoms did not follow.

Von Pirquet[2] described an analogous phenomenon, to which he gave the name of allergie. Although we use the word anaphylaxie in England, the phenomenon often goes by the name of "hypersensitiveness." Several writers have attempted to differentiate between anaphylaxis and allergy, but there can be little doubt but that anaphylaxis, allergy, and hypersensitiveness are three terms for one phenomenon.

As there has been a tendency to include various other phenomena under the heading of anaphylaxis, an attempt has been made by some to limit the term to the condition produced by proteins only. The chief reasons for taking the narrow standpoint were (1) because the reaction was considered specific, and (2) because it was thought that the production of so-called anti-anaphylaxis could not be wrought in the other cases. Before this, the impression was general that only proteins could produce shock, but symptoms exactly like those caused by even a generally non-toxic protein, such as egg-albumen, can be brought about by the intravenous administration of aluminium hydroxide to rabbits and of arsenobenzene to man. Instead of calling the shock produced by chemo-therapeutic agents by that name, and correlating it with the shock produced by proteins, the name of nitritoid crisis has been given to it by Milian,[16] and this has unfortunately only served the more to confuse this already vexed subject. It is true that proteins may most readily produce shock, for various reasons which will be elucidated later. Finding that certain colloidal substances would also produce shock, and that anti-shock could be brought about by the same means that Besredka[3] employed in the case of proteins, I came to the conclusion that the one necessary characteristic of the substance, which is to produce shock, is that it should be a colloid.

Even this is not strictly true, because an overdose of crystalloids under certain conditions may produce the same symptoms; which is only to be expected when there is no hard and fast line between a crystalloid and a colloid, and when shock is nothing more or less than an upset of the normal hydrogen ion concentration of the serum. As shock produced by crystalloids scarcely comes within the confines of practice, I think we are justified in drawing the line at colloids, and in asserting that the one

necessary feature of a shock-producing substance is that it must be a colloid.

Here, then, is the first indication of the connection between shock and immunity; substances to produce shock must be in the colloidal state, and so must antigens, antibodies, etc. A fact that has led to much confusion is that the symptoms of shock vary in different animals as well as in the same kind of animal, according to the particular organ which appears to be most affected first. This variation is more likely to be met with in man than in the animals used for experiments. There is little need to dwell upon this, because, whether the symptoms are mainly pulmonary or mainly cardiac does not immediately concern us, the first change that takes place in every case is an upset of the normal hydrogen ion concentration of the serum. Another point about the shock-producing substance is that it may be specific. Here, again, the specificity is not absolute; like that met with in immunity reactions, it is only of an overlapping nature. As specificity is met with in proteins only, and as the rationale of shock was discovered from experiments undertaken with metals and non-metals, it will be best to leave the subject of specificity till later. When I first began to work with metals, two points became evident: (1) the suddenness with which they might cause death; (2) the close resemblance in the changes found post mortem, whatever the metal was which caused the death and whether the death had been instantaneous or not.

If an animal dies some days after a large intravenous injection of protected colloidal bismuth, death is obviously due to the toxic action of the metal. If an animal dies instantaneously before even one hundredth of the dose of unprotected colloidal bismuth is injected intravenously, death is due to shock and not to the toxic (in the sense that we use the word) action of the metal, but as the post mortem changes are much the same in both cases, the first clue is forthcoming of the connection between shock and toxicity—a connection which will receive greater attention later. All that need be said here is, that the symptoms of the shock and the post mortem changes are in the gross identical, whether the element is a metal or non-metal, and whatever metal it is—furthermore, whether the shock-producing substance is an element or a protein.

The next point to be noticed was that several cubic centimetres of a drug could be injected intramuscularly with impunity, while 0.1 c.cm., when injected intravenously, was sufficient to kill the animal instantaneously. This at once suggested that the primary change in shock occurred in the blood-serum. On examining the blood from a shocked animal, two

points stood out above all others (1) that the blood clotted very slowly; (2) that the serum lost its complement.

Having previously ascertained[4] that complement was nothing more nor less than the normal hydrogen ion concentration, it at once occurred to me that shock resulted from its upset. The first drug with which I experimented was colloidal aluminium hydroxide, a colloid which produced fatal shock in rabbits when injected intravenously, but not when injected intramuscularly. As a protein very seldom causes shock when injected for the first time, but only when repeated owing to the action of specificity which can play no part in the case of inorganic colloids, the next step was to add protein to the colloidal aluminium, which allowed one to inject 30.0 c.cm. intravenously with impunity. From this it follows that a suspension colloid produces shock, but not when given an emulsoid coating. As protection decreases the therapeutic action of a drug, and as any beneficial result following the use of the preparations might be put down to the protective and not to the element—vide peptone and pyrogenic therapy[7]—I made a series of experiments, and found that metallic colloids of low atomic weight could be protected with such a simple amino-acid as glycine.

Finding later that the amino group was the most important group in the protective substance, because its conversion into an amino group by formaldehyde destroyed the protective action, it was reasonable to class colloids into those which contained amino groups and those which did not, i.e., emulsoid and suspensoid respectively. In all colloidal systems there are two phases—external and internal, of which the former in the case of the serum is, in the main, an aqueous solution of salts, while the latter is the protein which exists in the form of colloidal particles. The protein colloidal particles are kept in "solution" by salts or electrolytes, which are attached to them and balance with those in the external phase. This balance is the normal hydrogen ion concentration or standard alkalinity of the serum. If the normal hydrogen ion concentration is upset, which may be done without its being capable of being registered by even the finest instruments which we have at our disposal, thereby accounting for the varied views held as to the relationship between acidosis and shock, a remarkable change may be found to occur in the internal phase if the serum is examined ultramicroscopically.

Some of the colloidal particles vanish and presumably go into true solution, while others increase in size. After further investigation, I came to the conclusion that the increase in size was due to the imbibition of water or gel formation, which is also a colloidal emulsion, but one in

which the internal becomes the external phase. In this change the protein colloidal particles lose some of the ions adsorbed to them, and as oxidation and reduction are regulated by these particles, it can be readily understood what a profound effect must be produced when the normal hydrogen ion concentration of the serum is upset in vivo. The balance between the two phases in the serum is regulated in the main by the protein colloidal particles, which have extraordinary powers of rapidly readjusting any upset. This explains why a mere upset in the external phase is not necessarily felt in the internal phase, a point which can easily be proved by injecting intravenously a simple acid or a simple alkali. There must be some action between the internal phase and the substance injected before the balance is sufficiently upset to produce shock; hence, the reason why the shock-producing substance must be a colloid.

Suspension colloids like aluminium hydroxide are sensitive to univalent electrolytes, while emulsion colloids are not, and as emulsion colloids when fully ionized appear to be prepared to share their ions with other colloids they meet, which are less ionized, it may now readily be understood how and why plain colloidal aluminium produces shock. If the action is as stated, it was reasonable to suppose that shock would not occur if the permeability of the protein colloidal particles was stabilized to avoid the electrolytes being broken off. As the permeability is largely regulated by calcium, and as calcium appears to be amongst the first of the ions to be discharged, thereby accounting for the tardy clotting which is a typical feature of shock, I undertook some experiments and found that if calcium chloride was injected intramuscularly the day before, or intravenously into one ear just before the colloidal aluminium was injected into the other, no shock followed.

As the shock-action of aluminium hydroxide is due primarily to its strong positive electric charge, owing to the tri-valent ion Al . . . , which is held in close proximity to the oppositely charged ions in the serum, thereby temporarily increasing the hydrogen ion concentration of the serum, my next step was to see whether a drug with a strong negative charge would act likewise. The drug I chose was colloidal silicic acid, which is an emulsion colloid so far as its internal phase contains water, but not so far as the relationship it bears to shock, and found, as I expected, that the picture in all its details was the same as that given by aluminium hydroxide. When I mixed colloidal aluminium hydroxide and colloidal silicic acid in equal parts, I found that the mixture could be injected with impunity. To my mind, this is conclusive that shock is

caused by an upset of the normal hydrogen ion concentration of the serum, or, in other words, by the destruction of complement in vivo.

Relationship Between Shock and Immunity

Without recapitulating the work done on the modus operandi of immunity,[4] it will suffice here to compare shock with the hæmolytic system. Provided complement is present, an alteration of surface tension, allowing hæmoglobin to pass out of the red blood-corpuscles, will occur when such corpuscles come into contact with the colloidal particles of a serum which has been immunized against them. Not only will hæmolysis occur when the stereo-chemical molecular configuration of the protein colloidal particles of the corpuscles and immune serum is homologous, but also some complement will be destroyed as well. It requires no further explanation to show that the rationale of the hæmolytic system is similar to that of protein shock. If my view is correct, that there is no fundamental difference between protein shock and drug shock, it would be reasonable to suppose that a colloidal preparation would take the place of the immune serum (amboceptor) in the hæmolytic system.

A set of experiments was then undertaken, which can be tabulated as follows: Unprotected colloidal aluminium hyroxide and unprotected colloidal silicic acid will each take the place of the immune serum in a hæmolytic system. Neither colloidal aluminium hydroxide nor colloidal silicic acid, whether protected with an amino acid, peptone, or protein, will take the place of the immune serum in a hæmolytic system. If unprotected colloidal aluminium hydroxide and unprotected colloidal silicic acid are mixed in equal parts, the mixture will not take the place of the immune serum in a hæmolytic system. As shock occurs, or does not occur, when parallel experiments are undertaken in vivo, as in both instances complement is in part destroyed, and as adsorption is necessary between the red blood-corpuscles in vitro and the colloidal protein particles in vivo, and a suspension colloid possessing either a positive or negative charge, proof now seems to be complete that there is no fundamental difference between drug and protein shock, and that shock is primarily due to an upset of the normal hydrogen ion concentration of the serum, dependent upon adsorption between the colloidal particles of the internal phase and those of the shock-producing substance.

Symptoms of Acute Shock

The clinical picture produced by shock in guineapigs and rabbits is much the same. Almost before the injection is finished the animal struggles violently, and at first runs about as if mad. It then falls and passes

its urine and fæces involuntarily. Respiratory movements cease, the heart goes on beating, but finally the animal dies from asphyxia. If an autopsy is made, all that is found is a hæmorrhagic congestion of the stomach, intestines, lungs and heart. In man the symptoms are different, and appear to fall into two groups: (1) when the heart stops beating; (2) when respiratory failure occurs without cardiac failure. In the first case, the eyes become bright and bloodshot, the patient becomes pallid, perspires profusely, vomits, and faints. The blood-pressure quickly falls, no pulse can be felt, and the heart stops beating. Urine and fæces are passed involuntarily, and the latter are always liquid consequent upon the vasodilatation and congestion of the capillaries of the intestines. In the second case, the lips and tongue swell, the patient feels as if his neck was in a vice and that he is going to choke and be suffocated. The patient cannot talk, he may be violent, and in time he becomes cyanosed and asphyxiated. The asphyxia is said to be produced by a tetanic contraction of the smooth muscle-fibres of the small bronchi. When the contraction ceases, the patient feels perfectly well, but on recovering from a cardiac attack excruciating pains in the legs, feet, and hands are complained of, due, presumably, to the restoration of the normal circulation.

Why, in the one case, the attack should be pulmonary, and, in the other, cardiac, depends probably upon the varied concentration of the salts of the serum in different parts of the body, and on where the adsorption first takes place. If arseno-benzene is the shock-producing substance, it may happen that a toxic erythema supervenes upon the shock in the course of a few days. Some cases are actually followed by typical arsenical dermatitis. Post mortem the same changes are found as above described in animals. One of the most interesting points in connection with shock, which may be mentioned here, is that it will not occur if the animal is anæsthetized. In man, shock is much more apt to occur in robust people than in chronic alcoholics, and pregnant women are protected against it. The explanation is probably to be found in the work done by Lillie[5] (quoted by Crile), who demonstrated that the addition of ether to the sea-water, in which arenicola are living, causes changes in the semi-permeable membranes, as a result of which those membranes become less permeable to the passage of ions. In other words, true adsorption and exchange of ions is less likely to take place between the particles of the internal phase and those of the shock-producing substance if the former is under the influence of alcohol, ether, chloroform, etc.

Pregnant women are less liable to shock than other women, and arseno-benzene more readily produces shock in early than in late cases of syphilis, presumably owing to the fact that the protein particles are larger, less ionized, and, therefore, less likely to reach that degree of instability which is possible in early cases of syphilis, and in women who are not pregnant. Moreover, the larger the size of the particles, the more carboxyl groups they contain; therefore, chemical combination would more readily tend to take place between them and the drug used. Furthermore, when a colloid is injected intravenously, its first action is to break down the large particles into several small ones, which become more emulsoid in character, thus increasing their adsorptive capacity. Finally, increasing the dispersion of colloidal particles renders them less permeable to the passage of ions.

If a patient dies under an anæsthetic, death is usually ascribed to Status lymphaticus. Many of the deaths are ordinary cases of cardiac shock. I cannot help thinking that Status lymphaticus is a toxic condition which renders the patient more liable to shock. If this is the case, then the Status lymphaticus is not the cause of the shock or death. It is probable that the toxin is one which raises the hydrogen ion concentration. It is a well known fact that if ether is used before chloroform, the latter cannot exert its full power, with the result that the shock is less likely to occur. I mention this, because it fits in with what has already been said concerning the share which permeability takes in the production of shock.

Taking, finally, the case of alcohol poisoning, alcoholics are more difficult to anæsthetize than non-alcoholics, presumably for the same reason that ether checks the deleterious action of chloroform.

Relationship Between Drug and Protein Shock

On coming to work with metals which have a high atomic weight, such as gold, mercury and bismuth, I found that they were more difficult to protect, and that they required higher amino-bodies than the simple amino-acids.[6] This became still more decided on working with organic amino-compounds. At first this appears paradoxical, because the emulsoid properties conferred upon a suspension colloid by the addition of an amino-acid are natural to metallic colloids which have a high atomic weight, and still more so to organic amino-compounds which are themselves truly emulsoid. There appears to be no hard and fast line between a suspension and emulsion colloid, but the higher the ladder is ascended until the protein goal is reached—a protein is an emulsion colloid par

excellence—the more difficult it becomes to prevent a shock-producing substance from exhibiting its unpleasant action. Indeed, proteins are impossible to protect without destroying their properties, consequently one is obliged to turn the attention to the injected party and render it immune to shock (anti-shock). The explanation for this is probably to be found in the greater adsorptive power possessed by emulsion colloids. Metals with a high atomic weight become more easily attached to or better adsorbed by the protein colloidal particles than metals with a low atomic weight. Adsorption is more pronounced when the element is part of an amino-compound, and still more so in the case of proteins, especially when a specific protein retains its complement—note increase of action when a shock-producing protein is injected the day it is withdrawn.[3]

As adsorption appears to be influenced by the arrangement of the amino-groups, and as it is greatest when the shock-producing protein is specific, I have formed the opinion that specificity is, when the stereochemical molecular configuration of the two interacting proteins is homologous. Shock then occurring with emulsion colloids is due to an upset of the normal hydrogen ion concentration, which results from an increased adsorption and the splitting off of ions from the internal phase of the serum.

Prevention of Shock

Shock can be prevented in two ways: (1) by protecting the shock-producing substance; (2) by protecting the animal (anti-shock). Colloidal metals with a low atomic weight can be protected with glycine. Colloidal metals with a high atomic weight require a protein. Organic amino compounds require a protein, or conversion into a salt so as to be injected in solution.

Colloidal drugs may still further be protected by being allowed to mix well with the blood before they are injected. To insure a complete protection, it is necessary for the fresh blood to remain in contact with the drug for some time.

I had a preparation of intramine, which could not be injected, as it was, even in 5.0 c.cm. doses, owing to the shock it produced. I withdrew 50.0 c.cm. of the patient's blood and mixed it with 50.0 c.cm. of the 0.1 per cent. colloidal suspension of intramine. The blood hardly clotted. Next day, after filtering the mixture through a thin layer of wool, I injected 80-0 c.cm. intravenously into the same patient, without his experiencing the slightest inconvenience or after-effects. A protein cannot

be protected. Where protection is possible, it may be enhanced by the addition of glucose and by having a trace of the salt of the metal from which the colloidal substance is prepared. Protection can be rendered certain by having present a like substance which has an opposite electric charge to the main body. Unfortunately, the more safe a drug is rendered, the more its therapeutic properties are sacrificed.

The state of anti-shock is brought about by injecting one or more, but very much smaller, doses of the shock-producing protein before the amount required for therapeutic purposes is injected. Besredka[3] found that an intramuscular injection beforehand prevented shock from occurring when the therapeutic dose was injected intravenously, and that better protection could be assured by prescribing two or three minuute doses intravenously every five to ten minutes and then allowing about an hour to elapse before injecting the therapeutic dose intravenously. This method of producing anti-anaphylaxis was regarded as being peculair to proteins, and served to define the limits of what should be included under the heading of "Anaphylaxis." I then undertook several experiments, which showed that anti-shock could be produced in animals against colloidal preparations, as Besredka[3] had produced the condition against proteins. If four animals are injected intramuscularly, two with 5.0 c.cm. of colloidal aluminium hydroxide, and two with 5.0 c.cm. of colloidal silicic acid, it is found that all four will tolerate a lethal dose of either colloid, injected intravenously the next day. The colloidal aluminium hydroxide protects the animal from the same colloid, because the protein colloidal particles have accommodated themselves thereto and from the opposite colloid, because of the factor of the opposite electric charge.

If an animal is injected intravenously with a mixture of equal parts of colloidal aluminium hydroxide and colloidal silicic acid (dose irrelevant), half an hour later fifty times, or more, the lethal dose of either can be injected intravenously with impunity. If an animal is injected intravenously with a lethal dose of either colloid, but death is prevented from ensuing by a timely intravenous injection of a calcium chloride-glucose-gelatin mixture, another lethal dose injected afterwards has no effect. If colloidal iodine or intramine is injected either intramuscularly or intravenously, an ordinary lethal dose of any unprotected colloidal metal injected afterwards ceases to be lethal, while the shock-producing properties of an unprotected colloidal non-metal are increased. From this it will be readily understood why I have advised the use of colloidal iodine and intramine in metallic poisoning, and the excellent results obtained therefrom show that there is a close relationship between shock and toxi-

city. Furthermore, if an animal has received a lethal dose of an unprotected colloidal metal, provided colloidal iodine or, better, intramine is injected quickly enough, the animal will recover instantaneously. Therefore, the condition of anti-shock may be produced against colloidal preparations, which contain no protein; hence, it is only reasonable to suppose that shock is in any case primarily caused by an upset of the normal hydrogen ion concentration of the serum.

The question will naturally be asked why an intramuscular injection beforehand should be a safeguard against shock. Shock is the phenomenon occurring in vivo as we see in the complement-fixation, agglutination, and other immunity tests in vitro. In all these immunity tests an excess of either antigen or antibody will prevent the test from acting—vide negative Widal in worst cases of typhoid, and negative Wassermann reaction in the severest cases of early generalized syphilis. Again, experience shows that in producing an hæmolytic serum in a rabbit, an overdose of sheep's red blood-corpuscles destroys an immunity previously produced instead of increasing it. Again, as Besredka[3] showed, if a large dose of protein is injected into an animal, sensitization may be delayed many months. The phenomena exhibited in immunity reactions are due to an unequal balance of the electrolytes adsorbed to the bodies concerned. In other words, there is in all these reactions an attempt on the part of the protective substances (antibodies) to bring the bodies injected (antigen) into the same perfect emulsoid state as that in which they themselves are. Such a change can only be produced, if there is no excess of the perfect or imperfect emulsoid bodies. The proof of this is seen in the fact that aluminium hydroxide, if converted into an emulsion colloid, will not act as an amboceptor in a hæmolytic system, nor will it produce shock.

The fact that an excess of either antigen or antibody will nullify an immunity reaction, possibly explains why the precipitate formed by arseno-benzene with salts, especially with phosphates, is soluble in an excess of either. Danysz[8, 9] is of the opinion, that the shock following the administration of salvarsan, galyl, luargol, etc., is due to the precipitation of the drug by the salts in the serum in the capillaries of the lung or of the intestines, etc., according to the part of the body in which the shock starts. A precipitate, provided it is protected, will not upset a patient if injected intravenously. If blood is allowed to enter a syringe full of aluminium sulphanilate, a dense flocculent precipitate forms, which can be injected with impunity. Therefore, it is doubtful whether precipitation per se is the cause of shock, as Danysz holds. We now have the explanation why a concentrated solution of sodium chloride is able to preserve complement.

Treatment of Shock

The best treatment is to inject intravenously as quickly as possible a colloidal product, the prevailing electric charge of which is opposite to that which gave rise to the shock. In other words, if shock is caused by a metallic compound, which is almost sure to have a positive charge, instantaneous recovery will ensue if a non-metallic compound, which has a negative charge, such as intramine, is injected quickly enough. Colloidal iodine is not so efficacious as intramine. If a patient is shocked by an injection of arseno-benzene, he will immediately recover if 50.0 to 100.0 c.cm. of intramine are injected intravenously at once. If the prevailing electric charge is unknown, or if the compound has a double charge, which is the case with proteins, one or more intravenous injections of the following calcium chloride-glucose-gelatin mixture will bring about recovery, provided no time is wasted before having resort to it:—

Calcium chloride - - - - - - -	0.5 grm.
Glucose - - - - - - - - - - -	1.5 grm.
Gelatin - - - - - - - - - - -	0.3 grm.

This mixture is put up in 10.0 c.cm. ampoules, and is ready for use the moment the jelly has been melted by heat. The mixture can be injected as it is, or diluted with tap water or saline. Since I have employed these methods I have never lost an animal from shock, and have always been able to alloy the discomfort caused by shock, not to mention the risk attaching to it, in patients who are being treated with chemo-therapeutic agents.

It is well to remember that over-preparation of a patient before he receives an intravenous injection or an anæsthetic increases the likelihood to shock. Injections of pituitrin, adrenalin, and atropine prescribed beforehand will lessen the incidence of shock, but they are not of much value once shock has set in. The action of pituitrin and adrenalin is to cause vaso-constriction of the capillaries, and thus they prevent the vaso-dilatation which results from the hydrogen ion concentration of the serum being upset; therefore, they do not act on the cause but only on its sequence. Naturally, the patient should be kept warm, heat should be applied to the heart region, and artificial respiration instituted when necessary.

Chronic Shock

Shock is a condition which cannot be mistaken, but there are symptoms frequently associated with what one may call chronic shock, which

are very often mistaken or, rather, misunderstood. Asthma may be a symptom of chronic shock; Urticaria pigmentosa is probably always significant of chronic shock, and so are various other dermatoses. In shock asthma, in Urticaria pigmentosa, and in the cases of dermatitis I have in mind, there is always an increase of either eosinophile cells or mast cells. In all cases of shock, some change takes place in the complement; in acute shock, it vanishes altogether, and, in chronic shock, it is in part destroyed. Complement represents the balance between the hydroxyl and hydrogen ion concentration of the serum; in acute shock, we know that this balance is upset. In chronic diseases, in aleukæmic lymphocytomata of syphilitic origin, for instance, complement may fail to be demonstrated in serum freshly withdrawn,[10] and, in such cases, eosinophile cells and mast cells are often much increased in the diseased areas.

In my paper[11] on "The Role played by a Lymphocyte in Inflammation and its probable Relationship to Sarcoma," it was shown that if, in any infection, acute or chronic, the protective capacity of the host's cells is stimulated to its utmost point, then eosinophile cells and mast cells usually make their appearance. Elsewhere[10] I have shown that eosinophile cells and mast cells are very rich in oxidases. Not only are the oxidases especially pronounced, but the reducases are as well—note the affinity of mast cell granules for the methylene-red moiety of polychrome methylene-blue. The oxidase-reducase system is that part of the "solid" particles which regulates the hydrogen ion concentration of those particles. The oxidase-reducase system corresponds to the phosphate and bicarbonate systems which maintain the constant hydrogen ion concentration of the fluid part, in which the "solid" particles are in "solution." We know that the phosphate and bicarbonate systems are more easily upset than the oxidase-reducase system, and are at once influenced by the condition of shock. Hence, both in acute shock, during which death is threatened, and in the chronic condition, it would naturally be expected that the host would pour forth those cells or "solid" particles which are going to do their best to restore the hydrogen ion concentration back to its normal state. For this reason, eosinophile and mast cells are prominent in these conditions.

It is also to be noticed that in chronic shock a general swelling of the lymphatic glands may occur. This is doubtless a protective action on the part of the body against the shock-producing substance, because such a swelling tells of an enormous increase of lymphocytes, the protein colloidal particles of which find their way into the serum.

Cuti-reaction and Shock

The first to point out a connection between skin-reaction and hypersensitiveness was Arthus,[12] who observed that a local infiltration of the skin was set up by the fourth intramuscular injection of horse-serum. If the injections were continued, then the site became gangrenous. In doing experiments on animals I found, broadly speaking, that a relationship existed between the induration-producing properties of a drug and its shock-producing properties. In other words, a shock-producing colloid would produce induration and gangrene more rapidly than a protected colloid. We find exactly the same in practice, namely, that an unprotected colloid gives rise to enormous pain and induration when injected intramuscularly, while the more protected the colloid is, the less is the pain, and there is no induration. Again, venous thrombosis is more apt to follow an intravenous injection of a colloid not fully protected than one fully protected.

Let us now consider the cuti-reaction of syphilis. It is well known that Noguchi's spirochætal extract will not give a positive reaction in early syphilis and that the reaction is more violent the later the case of syphilis, allowing an ulcerative lesion to be produced, which closely simulates a gumma; indeed, the reactionary lesions produced range from a simple roseola to a papule, papulo-pustule, and ulcer according to the severity and age of the disease in the patient exhibiting them. Tuberculin will occasionally give a positive reaction in a late case of syphilis, the reaction being much more definite if an injection of pallidin (extract of cultured syphilitic spirochætæ) is given afterwards and vice versa. Almost any protein extract will produce a positive cuti-reaction in late syphilis, for the same reason that almost any antigen will serve for the Wassermann reaction[4] and that an extract of almost any organ will give a positive Abderhalden reaction with a syphilitic serum.[4] One of the best protein emulsions to use for the cuti-reaction in syphilis may be prepared from that contained in the urine of a syphilitic, provided it is filtration protein and a protein in which the globulin is in excess of the albumen.

As the protein in such cases is only a filtration through the kidney from the blood which is hyper-proteinæmic and can hold no more, I made an extract of the blood protein and of the cerebro-spinal fluid protein also, and found that a positive cuti-reaction could be obtained with them as with Noguchi's spirochætal extract. This proved that a patient's own serum could produce shock on himself, and it was this observation which

gave me the clue that malignant disease, as I have since been able in part to demonstrate, is nothing more nor less than that certain cells have so altered their colloidal state as to have lost touch with their fellow cells, a phenomenon which may be aptly termed autogenous parasitism. While on this point it is worthy of notice that an autogenous serum heated or treated with formaldehyde is toxic.[15]

One of the most interesting facts in conection with the cuti-reaction is that a very pronounced reaction may be obtained, especially in late syphilis, and a less pronounced reaction in patients who have never had syphilis, with 0.1 c.cm. of a 0.5 per cent. emulsion of agar-agar, provided iodides have been taken beforehand.[13], [14] Before explaining this peculiar phenomenon it will be necessary to say a few words about the modus operandi of the cuti-reaction. If an injected protein has a stereo-chemical molecular configuration homologous with the particles of the protein which it is going to meet, the adsorption between them will be so great as to cause a tremendous local disturbance of the normal colloidal state. The combined protein particles will have become so altered as to act as foreign bodies, with the result that the host will dilate his vessels to admit of a more rapid and greater flow of his protective substances, and, in addition, he will do his best to manufacture protective substances on the spot.

Clinically, the roseola corresponds to the dilatation and the papule to the bringing up of the protective substances. Should the vessel become congested or blocked by the enormous transport and local production of protective substances, the flow of blood will be cut off, with the result that the area of skin fed thereby will necrose, producing an ulcer or lesion resembling a gumma. Iodine increases the adsorptive capacity of protein colloidal particles because it breaks each particle up into several smaller ones, thereby increasing the total area of their action, and, as it is negatively charged, it will increase the shock action of a colloid which has the same charge, just as intramine injected intravenously increases the shock-action of unprotected colloidal silicic acid. Bromides have a similar action to iodides, but to a less pronounced degree, and nitrates have a still feebler action; therefore the activity of action follows the Hofmeister's series as regards the precipitating action of anions on kations.

As the power of adsorption of the protein particles of a syphilitic serum is more pronounced than that of a normal serum, owing, in part, to the enormous increase of such particles in this disease, and, as a cuti-reaction can be obtained in a non-syphilitic with a substance like agar-agar, provided he has taken iodine, it shows that epecificity is not absolute, that luetin is not essential, and that the cuti-reaction as a diag-

nostic agent is not to be relied upon. The rationale of the inflammatory reaction, or, as it is more often called, the Herxheimer's reaction, which may follow an intravenous injection, is the same as that of a cuti-reaction.

Shock Action and Toxic Action of Colloids

Shock following the intravenous injection of colloids may be instantaneous, delayed for a few hours, or set in on the third day. For the sake of convenience, shock may be divided into early and late. Early shock has been discussed fully, so attention must now be drawn to late shock. I have never met with late shock except with arsenical preparations, which rather suggests the entrance of toxicity into its ætiology. The patients are always in the early generalization stage of syphilis, the shock almost invariably occurs on the third day after the second injection, and often has a fatal termination. The patients enter a state of Status epilepticus and then become comatosed and die. Post-mortem profound degenerative changes are found to have taken place in the nerve cells of the brain cortex. The fact that I have never seen a case of late shock follow any other colloid, undoubtedly proves that late shock is due, in part, to a toxic action of the arsenic.

The reason for using the word shock at all here is because the action is not entirely toxic, but partly of the nature of reactionary inflammation or Herxheimer's reaction which has just been described. The early shock produced by arseno-benzene is not a toxic action of the drug, like dermatitis is, for instance. Intramine may produce shock, but it is an absolutely non-toxic drug. When a drug upsets the normal hydrogen ion concentration immediately, or soon after it reaches the blood-stream, the symptoms caused should be spoken of as shock, but when arsenic, lead, phosphorus, etc., produce symptoms some time after their administration, owing to the damage caused to certain cells, such symptoms should be spoken of as toxic.

This distinction is only for the sake of convenience, for, on analysing the subject more closely, it will be found that the toxicity of a drug is in part due to its power of upsetting the hydrogen ion concentration locally. Nevertheless, there is a distinct difference between the shock and the toxic action of colloids. If an injection of arseno-benzene produces shock, a subsequent injection will not necessarily do so; in fact, the contrary is to be expected. But if an injection of arseno-benzene produces symptoms of toxicity, and the patient recovers, the toxic action will be increased if the injection is repeated.

I wish to express my deepest gratitude to those workers who laid the

foundation which gave me ideas to construct upon it, and to my co-workers, Dr. Mackenzie Wallis, Mr. J. Patterson, and Mr. J. Ward for the invaluable assistance they have afforded me.

Summary

1. Shock, anaphylaxis, allergy, hypersensitiveness, and nitritoid crisis are all words for the one phenomenon, which is an upset of the normal hydrogen ion concentration.

2. The first proof of this is that unprotected colloidal aluminium will produce shock because the positively charged aluminium (Al...) increases the "acidness" of the serum. Unprotected colloidal silicic acid acts likewise by increasing the "alkaliness," but if the two are mixed, shock does not occur, because the mixture is iso-electric.

3. The first change affects the colloidal protein particles in the serum because if their permeability is stabilized by calcium chloride, shock will not ensue.

4. Relationship between shock and immunity is shown by $Al(OH)_3$ and $Si(OH)_4$, each being able to take the place of amboceptor in a hæmolytic system if unprotected, but not if protected or mixed.

5. The symptoms of shock in guinea-pigs and rabbits are always the same, but in man they may be divided into (1) cardiac, (2) pulmonary.

6. Proteins, although emulsion colloids produce shock, (1) because they are more readily adsorbed to the colloidal protein particles in the serum, (2) because specificity plays a part by still further increasing such adsorption.

7. Shock can be prevented (1) by protecting the shock-producing substance; (2) by protecting the animal (anti-shock). The former is done by adding an amino-body and the latter by injecting a small dose intramuscularly first, or one or more sub-lethal doses intravenously or by making the first injection of the colloidal drug iso-electric or by injecting beforehand a colloidal preparation which has an opposite electric charge.

8. The course of shock can be checked by a timely injection of a colloidal preparation which has an opposite electric charge or by a mixture containing calcium chloride, glucose and gelatin.

9. Asthma, Urticaria pigmentosa, and various chronic dermatoses may be symptoms of chronic shock.

10. The cuti-reaction and inflammatory reaction (Herxheimer's sign) are mild and local forms of shock.

11. There is no absolutely hard and fast line between shock-action and toxic action.

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* There may also be a conglomeration of particles and even an increase in number, according to the electric charge of the shock-producing substance.

PERSONAL AND NEWS ITEMS

In Sweden a physician cannot sue for his fee, while in Belgium a solicitor is in a similar position. By Chinese law, not only the doctor, but also the priest, the fortune-teller and clairvoyant are without legal remedy. All these debts are, however, looked upon as "debts of honor", and payment is rarely evaded.

That of the 111 cases of smallpox reported to the department in Ottawa since October 1st, there was not a single case in which the patient had been vaccinated during the past seven years, was one of the outstanding statements made at a meeting of the Ottawa Board of Health held at the City Hall. The board members again emphasized the importance of vaccination, and authorized Dr. Lomer, head of the department, to appoint six or eight physicians throughout different parts of the city so that there will be easy facilities for vaccination.

Women's Institutes in the county of Norfolk are organizing a big deputation to appear before the County Council at the December session and advocate a county hospital.

There have been a number of cases of typhoid fever in York township, near Toronto, due to contaminated water. One sample yielded 5,000 germs to a gill.

Dr. Hastings, M.O.H., Toronto, states that there is a serious lack of accommodation for contagious cases at the Isolation Hospital. Many cases are refused admission.

The last party of patients from Speedwell Hospital, Quelph, about fifty in number, were transferred recently to Toronto, where they will be treated at Christie street hospital. They left Guelph during the morning, accompanied by Dr. Fallis, who has been acting medical superintendent at the Speedwell institution, and arrived at the Dominion Orthopaedic Hospital. They had been preceded by several other small parties, and with their departure the Speedwell hospital was closed.

Some of the hospitals in London are in much need of funds. The parliament has adopted legislation to furnish relief by furnishing rates for their support.

Dr. Samuel James Meltzer, head of the department of physiology and pharmacy in the Rockefeller Institute since 1908, who has contributed many discoveries to medical science, died at his home on November 8th. He was born in Russia sixty-nine years ago and came to the United States in 1883. He made notable contributions to the treatment of tentanus during the war.

Work on the construction of the new hospital for sick children in London, to be erected as a war memorial largely as a result of the efforts of the Daughters of the Empire, will probably be undertaken before the end of the month. Tenders rceived indicate that the first building will cost a quartr millions dollars. Seven houses at Ottaway Avenue and Colborne Street are being removed to prepare the site.

The great war lessened the birthrate 20,000,000, caused the death of 15,010,000 through hardships, and 10,000,000 were killed, making a total of 45,000,000.

Dr. R. W. Powell, registrar of the Medical Council of Canada, announces that the following candidates are included among those who have successfully passed the council's examinations for registration on the Canada Medical Registrar; J. K. Gordon, Winnipeg; W. H. Hastler, Edmonton; F. N. K. Falls, Ottawa; M. Mackson, Alexandria, Ont.; R. B. McQuay, Portage la Prairie, Man.; W. T. Pocack, Belleville, Ont.; H. J. Robillard, Ottawa; N. J. Stevens, Arnprior, Ont.; J. A. Street, Vancouver, B.C.; C. J. Willoughby, Kamloops, B.C.

A party headed by Dr. Hastings, M.O.H., was recently on a tour of leading American cities to inspect hospitals and gather ideas to be embodied in a municipal hospital which it is proposed to erect in Toronto as soon as the financial situation eases up. Other members of the party were Controller Cameron, Ald. Hiltz, and H. A. Rowland, office manager of the medical health department. They visited Detroit, Cincinnati, Washington, Baltimore, New York and other places.

After several unsuccessful attempts to get an acceptable commission together the Ontario Government has secured the consent of five well-known gentlemen to carry on the promised enquiry into the question of Government assistance to the various universities, and to advise them as to the relative financial aid each should receive. Recently Hon. R. H. Grant announced the appointment of Hon. Dr. Cody, former Minister of Education; Col. A. P. Deroche, of Ottawa; T. A. Russell, of Toronto; C. R. Somerville, of London; Sir James Willison, and J. A. Wallace, of Simcoe, to compose the commission, with Dr. Cody as chairman.

It is reported that North Toronto is to have a hospital in the very near future. It is a well-known fact that St. John's Hospital, at present located on Major Street, is preparing to move to a more suitable location, and rumor has it that it will occupy St. Clement's College on Blythwood road, belonging to the Aitken family. The property has a very wide frontage, and the old residence is a large and well-built one.

The increased demand for hospital accommodation is reflected in the reports presented at the annual meeting of th Royal Victoria Hospital, Barrie. Receipts from all sources, including donation for new electric sterilizing outfit, amounted to $36,585, and the year closed with a substantial balance. There were 848 patients treated, 82 births and 485 operations. The directors are: Thos. Beecroft, president; Geo. Ball, vice-president; H. A. Sims, secretary; H. M. Lay, treasurer; Donald Ross, Dr. Little, J. A. MacLaren, Rev. Dean O'Malley, Dr. Arnall, A. J. Sarjeant, H. J. Grassett and A. W. Fletcher.

The annual report for the Hospital for Incurables, Toronto, showed that 79 patients had been admitted, that 49 had died during the year, and that 214 were patients at the end of the year. The receipts had been $129,908 and the expenditures $142,003. At the end of the year there was an overdraft of $21,489.

Probate to the will of her husband, the late Dr. William Hodgson Ellis, Professor in the Faculty of Science, University of Toronto, has been granted to his widow, Mrs. Ellen Maude Ellis, who is the sole beneficiary and executrix. The estate amounts to $43,343.

The quarterly meeting of the Huron County Medical Association was held in the Goderich Board of Trade rooms on November 9th. The meeting was fairly well attended. Papers were read by Dr. Macklin, of Goderich, and Dr. Gunn, of Clinton, both papers causing a great deal of discussion. The doctors have promised no further raise in fees at present. A letter of condolence is to be sent to the family of the late Dr. Kennedy, of Wingham, who was one of the leading spirits of the associ-

ation. Dr. Emmerson, of Goderich, received the congratulations from the association on his re-election to the Ontario Medical Council.

The twenty-fifth annual meeting of the Kitchener-Waterloo Hospital Trust was held on November 2nd in the sunroom of the new nurses' home, which is nearing completion. The reports for the year showed the total number of patients treated during the year to be 1,407, the average day's stay 11.2 and the daily cost per adult patient $2.92. The total receipts from Government and municipal grants, paying patients and other sources amounted to $44,011.69, and the expenditures $44,464.-41, leaving a deficit of $452.72. The new nurses' home, the gift of the late Mr. Kaufman, will soon be opened.

At the annual meeting of the Women's Hospital on Rusholme Road, Toronto, the following statemetn was made: There were patients being turned away and the hospital was filled to capacity. Miss Warner, the treasurer, stated in her report, that the maintenance receipts for the year were $46,168.1, with expenses of $46,741.89, making a slight overdraft amounting to $573.78. The capital account receipts were $9,575.74, and expenditure $9,407.82, leaving a balance of $147.07. Figures given by Mrs. H. M. Bowman, superintendent, showed by comparison with last year: 842 patients admitted in 1919, and 985 in 1920; 248 birth in 1919 and 367 birth in 1920; 26 deaths in 1919 and 49 in 1920. The outdoor department treated medical cases, 129; chest, 40; surgical, 9; ear, eye, and throat, 21; gynaecological, 21; obstetrics, 114; venereal diseases, 299; child welfare, 187; making a total of 1,120.

OBITUARY

JOHN MOORE, M.D.

Dr. John Moore of Shannonville, was the victim of a fatal accident at the Point Ann crossing of the Canadian National Railways near Belleville, on November 12th. He left Shannonville by automobile at 7 o'clock for Point Ann to attend a patient, and was struck by No. 29 G.T.R. train, westbound, on the level crossing, the approach to which leads through a cut surrounded by cedar bushes. As he was still living, he was taken aboard the train to Belleville. Ten minutes after admission to the General Hospital, however, he passed away without recovering consciousnss.

Dr. Moore was a native of Plainfield, where he was born 64 years ago. He was graduated from Queen's Medical School, Kingston, and practised for a while in Michigan. More than 20 years ago he settled in

Shannonville, where he enjoyed a very wide practice. He was a School Trustee and Chairman of the Library Board, for years acted as Superintendent of the Presbyterian Sabbath School and taught a Bible class. He was a member of the Masonic Order, the Oddfellows and the A.O.U. W. His wife, one son and one daughter survive. An inquest was opened in Belleville before Coroner Dr. Yeomans. Five brothers and one sister also survive.

FRANK WARREN, M.D.

Dr. Frank Warren, the oldest physician in Whitby, died on November 9th, from a heart affection, in his 71st year. He was born at the bay and was the son of the late John Warren, who was at one time collector of Customs there. Dr. Warren was educated at Upper Canada College and graduated from McGill University in medicine. For many years he practised in the village of Brooklin, until moving to Whitby 25 years ago. His wife predeceased him some years ago. Two daughters, Miss Louise and Mrs. A. E. Christian, survive him.

JOHN GRANT, M.D.

Dr. John Grant, after 23 years in practice in Woodville, died on 2nd November, in his 58th year. He had been in poor health for the past two years, but continued to practise until two months ago. His widow survives him.

THOMAS W. BEEMAN, M.D.

Dr. Beeman died at his home in Perth, Ontario, on September 9th. He graduated from Queen's University, Kingston, and became a member of the College of Physicians and Surgeons in 1879. He practised since the date of graduation in Perth.

BOOK REVIEWS

BRAIN INJURIES

Diagnosis and Treatment of Brain Injuries with and without a Fracture of the Skull by William Sharpe, M.D., Professor of Neurologic Surgery, New York Polyclinic Medical School and Hospital; Consulting Neurologic Surgeon, Manhattan Eye and Ear Hospital, Hospital for Ruptured and Crippled, Beth Israel Hospital, New York City, and Nassau Hospital Mineola, Long Island, etc., etc. 232 illustrations. Philadelphia and London: J. B. Lippincott Company; 1920. Price, cloth, $8. Canadian agents, Charles Roberts, Unity Building, Montreal.

We have here a new and superb book on Brain Injuries. The author has devoted much attention to the subjects discussed in this work, and has made himself an authority worthy of attention. The first part of the volume deals with General Considerations, the second with Brain Injuries in Adults, and the third with Brain Injuries in New Born Babies and Children. Throughout the book there is ample evidence of the great care taken by the author to make his contribution to medical literature a really worthy one. Viewed from every standpoint he has succeeded. The style of writing is clear and liquid, and the illustrations have been chosen with marked judgment so as to throw light upon the text. In diagnosis, pathology, treatment, and operations the practitioner desiring sound advice can find it here. We can recommend this work as one that is sure to give satisfaction and speedily win its way into the confidence of the medical profession.

MASSAGE AND EXERCISES

Practical Massage and Corrective Exercises with Applied Anatomy, by Hartvig Nissen, President of Posse Normal School of Gymnastics; Superintendent of Hospital Clinics in Massage and Medical Gymnastics, etc., etc, Fourth Edition, with 68 illustrations, with several full page half-tones. Philadelphia, F. A. Davis Company; English Depot, Stanley Phillips. London. 1920; Price $2.00 net.

This book has been long before the medical profession. It covers the ground of massage and exercise in a very lucid and instructive manner. We have no hesitation in recommending it to all of our readers who require such a work. Its perusal will bring both pleasure and profit to its readers. It covers the ground fully and well.

INTERNATIONAL CLINICS

A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Paediatries, Obstetrics, Gynaecology, Orthopaedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and other Topics of Interest to Students and Practitioners. Edited by H. R. M. Landis, M.D., Philadelphia, with the Collaboration of a number of eminent Physicians, Surgeons and Specialists. Volume III. Thirtieth series, 1920. Philadelphia and London: J. B. Lippincott Company, 1920. rice, per volume, $2.25.

The present volume contains three clinics, five articles on medicine, one on industrial medicine, five on surgery, one on psychiatry, and three on paediatrics. These articles are all well prepared and the volume is appropriately illustrated. For the long period of thirty years these volumes have been appearing four times a year. The standard of excel-

lence has been maintained throughout. Any one fortunate enough to possess a complete set of International Clinics has at his command a very unique and valuable consulting library. It is always a distinct pleasuse to review the volumes in this series, and a pleasure to recommend them to our readers. We have heard of none who thought our judgment was not sound in doing so. We feel confident that there is a long and useful career ahead of International Clinics.

PERSONAL AND COMMUNITY HEALTH.

Short talks on Personal and Community Health by Louis Lehrfeld, A.M., M.D., Agent for the Prevention of Disease, Department of Public Health, Philadelphia. F. A. Davis Company, Philadelphia: 1920; Price, $2.00 net.

This book has been prepared to cover a new field and place in the hands of those engaged in the maintenance of public health, trustworthy information regarding the performance of their duties. It takes up in concise form the causation of many diseases, and sets forth the methods best suited for their prevention. This is just the sort of book all social service workers should study, and we wish for it a very wide circulation.

NERVE CONDUCTION

The Conduction of Nervous Influx by Keith Lucas, Member of the Royal Society of London, Master of Conferences at Trinity College, Cambridge. Published by E. D. Adian. Paris, Gauthier-Villars & Co, 55 Quai des Grands-Augustins, 1920: Price, 3fr. 50 cent.

To those who are interested in the study of the physiology and functions of the nervous system, this is a very valuable contribution. It discusses in a highly scientific way the condition of nerve stimuli. The lectures forming this small book were delivered in London, and are now published in French.

MISCELLANEOUS

ONTARIO MEDICAL COUNCIL ELECTIONS

The quadrennial elections of the Council of the College of Physicians and Surgeons of Ontario, have resulted in the choice of territorial representatives for the eighteen divisions, into which the Province is divided as follows: No. 1, Dr. G. R. Cruickshank, Windsor; 2, Dr. G. M. Brodie, Woodstock; 3, A. J. Thompson, Strathroy; 4, Dr. A. T. Emmerson,

Goderich; 5, Dr. J. J. Walters, Kitchener; 6, Dr.S.McCallum,Thornbury; 7, Dr. H. S. Griffin, Hamilton; 8, Dr. E. T. Kellam, Niagara Falls; 9, Dr. R. H. Arthur, Sudbury; 10, Dr. A. D. Stewart, Fort William; 11, Dr. E. E. King, Toronto; 12, Dr. R. T. Noble, Toronto; 13, Dr. F. A. Dales, Stouffville; 14, Dr. T W. H. Young, Peterboro; 15, Dr. T. S. Farncomb; 16, Dr. W. Spankie, Wolfe Island; 17, Dr. R. N. Horton, Brockville, and 18, Dr. J. F. Argue, Ottawa. The homoepathic representatives are: Drs. H. Beeker and E. A. P. Hardy, Toronto; C. E. Jarvis, London; G. A. Rutledge, Lambeth, and W. S. Cody, Hamilton.

TORONTO STATISTICS

Quite a substantial increase in the more serious of communicable diseases is noticed in Dr. Hastings' monthly report. Diphtheria leads the list with an increase of 80 cases over last month, while scarlet fever is also very high. A slight decrease in the number of cases of typhoid fever is noticed. The table follows:

	Sept. 1920.	Oct. 1919.
Diphtheria	158	230
Scarlet Fever	83	103
Typhoid Fever	39	13
Measles	16	7
Smallpox	2	2
Tuberculosis	55	40
Chickenpox	6	155
Whooping Cough	78	69
Mumps	6	53
Diphtheria carriers	27	73

HOSPITAL RATES HIT CITY

An increase from $8.75 a week to $10.50 a week in the charges for the public wards of the various hospitals, to say nothing of the recent increase in doctor's fees, is given as the chief reason for the increase in the number of citizen's seeking relief from th Toronto Relief Office. During October 589 people applied for assistance, and only 64 refusals were made. For the same period of last year the total number of persons receiving assistance was 532, with 73 refusals. Money collected as part payment on hospital treatment for last month amounted to $1,071.10 against $676.85 for October, 1919.

An itemized list of the assistance given follows:—

	1920	1919
Admissions to hospitals	473	424
Home for Incurables	6	2
Consumptive Sanitarium	21	38
Burial orders (adults)	2	1
Burial orders (infants)	12	8
Infants' Home	7	14
Provisions and fuel	48	23
Transportation	8	11
Deportation	7	0
Totals	589	532
Refusals	64	73

PHENARSENAMINE IN ONTARIO

Toronto, October 26th, 1920.

Dear Doctor:

You are no doubt aware that the Provincial Board of Health has instituted a vigorous campaign against Venereal Diseases. In this connection, the Board some time ago determined to manufacture Salvarsen (606) in order to assist those cases of syphilis who are unable to pay for their treatment.

After coisiderable difficulty a license was obtained from the Dominion Government giving the Board power to manufacture this product which is called PHENARSENAMINE. This license, however, does not allow the drug to be sold to physicians, but allows the Board to give it free of charge to hospitals, venereal disease clinics, Government institutions and local medical officials of health for the free treatment of patients who are unable to pay.

The Phenarsenamine (606) has been thoroughly tested out, found satisfactory and is now ready for distribution with the foregoing restrictions.

Patients unable to pay in or near the large centres may now be treated with Phenarsenamine at the Venereal Disease clinics (if present) or in the public wards of hospitals, and the drug may be obtained from the Provincial Board of Health through the local Medical Health Officer. In the smaller towns and rural districts the M.O.H. has been given authority to requisition for the Phenarsenamine when satisfied that the drug is required for the free treatment of a patient. The Board has

arranged to send a specially trained medical officer to any part of Ontario where needed to demonstrate the method of preparation and administration and leave with the local M.O.H. or the physician detailed by him, the necessary apparatus to carry on the treatment. This apparatus will be considered to be on loan to the municipality and should be returned by the M.O.H. when the treatment has been completed.

Any other expense in connection with the treatment of venereal cases who are unable to pay should be borne by the municipality concerned unless there is a venereal disease clinic under Government supervision in operation. (See Section 14 of the V. D. Prevention Act). The Provincial Board at the present time is only able to supply free Phenarsenamine and the apparatus for its administration.

The Phenarsenamine is made up in ampoules in the following quantities:—

0.2 grams
0.3 "
0.4 "
0.5 " *
2.0 ") for convenience — if
3.0 ") several doses are to
4.0 ") be given.

*0.5 grams should not be used except in the case of a robust man whose tolerance of the drug has been well established.

I have the honor to be, Sir, your obedient servant,

JOHN W. McCULLOUGH,
Chief Officer of Health.

NEW APPOINTMENTS TO UNIVERSITY STAFF

The following appointments have been made to the staff of the University of Toronto, by the board of governors, for 1920-21:

Faculty of Arts—Miss H. I. Eadie and F. W. Kemp, class assistants in physics; Miss Maynard Grange, librarian, physiology; Miss Jean Masten, laboratory, assistant (part time), psychology.

Faculty of medicine (demonstrators, clinical surgery)—Dr. M. H. V. Cameron, F. A. Cleland, R. E. Gaby, Oliver Mabee, J. A. McCollum, A. S. Moorehead, A. H. Perfect, J. A. Roberts, D. E. Robertson, N. S. Shenstone, G. E. Wilson, A. B. Wright.

Assistants (clinical surgery)—Drs. H. W. Baker, H. E. Clutterbuck, G. M. Dale, R. R. Graham, C. H. Hair, G. C. McIntyre, B. Z. Milner, C. B. Barker, Robin Pearse, L. B. Robertson.

Temporary assistants (clinical surgery)—Drs. E. C. Beer, W. A. Costain, C. H. Gilmour, R. I. Harris, H. Harrison, A. S. Lawson, A. B. Lemesurier, J. C. McClelland, R. A. McComb, T. A. Robinson, E. E. Shouldice, J. S. Simpson, R. H. Thomas, F. E. Watts, J. H. Wood.

Faculty of Applied Science—C. E. Hastings, demonstrator in drawing.

Ontario College of Education—Miss Emily Fraser, assistant in headmaster's office, University Schools.

MEDICAL PREPARATIONS

THE TREATMENT OF SHOCK.

That the surgeon has in Adrenalin a dependable means of combating shock has been known to the profession for a number of years. As long ago as 1909 Mummery and Symes announced their observations on the effects of Adrenalin upon the blood pressure and recommended its use by the slow and continuous injection of a very weak solution into a peripheral vein. They also found that the action of Adrenalin is enhanced by the coincidental administration of pituitrin, this procedure producing a more marked effect in shocked animals than in normal subjects.

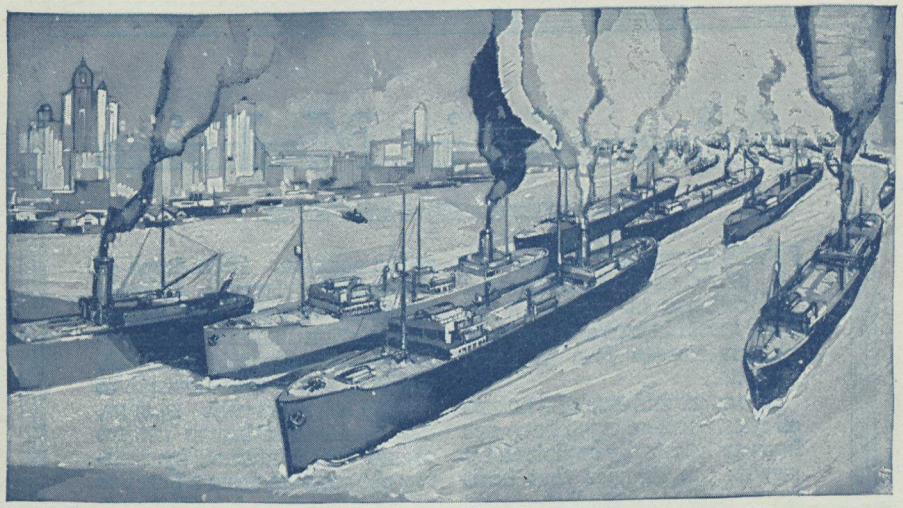
In our advertising section, under the title "Adrenalin in Medicine," will be found a brief review of the plan of treating shock with highly diluted solutions of Adrenalin Chloride, by intravenous infusion and by "centripetal arterial transfusion," after the method of Crile.

This little essay is the third of a series of concise and informative papers published in this rather unconventional form by Parke, Davis & Co. We have no hesitation in commending these meritorious articles to the consideration of our readers.

CURE FOR WORRYING.

The tension under which we live, the continual striving for gain, for advancement, in many cases for even the necessaries of life; the petty annoyances, grievances and worries which enter our daily life; the restlessness, the lack of contentment which is everywhere manifest, all these factors create a demand which must be satisfied," says Dr. W. A. Bloedorn, of the U.S. Medical Corps. In an article in the U. S. Medical Record the doctor writes appreciatively of the use of tobacco as a means of diversion. "Smoke 'Old Chum' tobacco and forget your troubles" is a good motto.

See next page.



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The expert chemists of the Nujol Laboratories of the Standard Oil Co. (New Jersey) have been able to produce absolutely pure Liquid Petrolatum of every viscosity from a water-like fluid to a jelly.

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Sample and literature based on the writings of Sir Arbuthnot Lane and other eminent authorities will be sent gratis. Mail coupon below.

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Adrenalin in Medicine

3—Treatment of Shock and Collapse

THE therapeutic importance of Adrenalin in shock and collapse is suggested by their most obvious and constant phenomenon—a loss in blood pressure.

The cause and essential nature of shock and collapse have not been satisfactorily explained by any of the theories that have been advanced, but all observers are agreed that the most striking characteristic of these conditions is that the peripheral arteries and capillaries are depleted of blood and that the veins, especially those of the splanchnic region, are congested. All the other symptoms—the cardiac, respiratory and nervous manifestations—are secondary to this rude impairment of the circulation.

The term collapse usually designates a profound degree of shock induced by functional inhibition or depression of the vasomotor center resulting from some cause other than physical injury, such as cardiac or respiratory failure.

Treatment aims to raise the blood pressure by increasing peripheral resistance. As a rapidly acting medical agent for the certain accomplishment of this object Adrenalin is without a peer. In cases of ordinary shock it is best administered by intravenous infusion of high dilutions in saline solution. Five drops of the 1:1000 Adrenalin Chloride Solution to an ounce of normal salt solution dilutes the Adrenalin to approximately 1:100,000, which is the proper strength to employ intravenously. A slow, steady and continuous stream should be maintained by feeding the solution from a buret to which is attached a stop-cock for the regulation of the rate of flow.

In those cases marked by extremely profound and dangerous shock or collapse the intravenous method may prove too slow or ineffective. Recourse should then be had to the procedure described by Crile and called centripetal arterial transfusion. Briefly it consists in the insertion into an artery of a cannula directed *toward* the heart. Into the rubber tubing which is attached to the cannula 15 to 30 minims of Adrenalin 1:1000 is injected as soon as the saline infusion begins.

The effect of this is to bring the Adrenalin immediately into contact with the larger arteries and the heart. Sometimes, even in apparent death, the heart will resume its contractions, thereby distributing the Adrenalin through the arterial system and accomplishing the object of this heroic measure—resuscitation and elevation of the blood pressure.

ADRENALIN ORIGINAL P.D.&CO. TRADE MARK

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