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A Monthly Journal of Medical and Surgical Science, Criticism and News.

THE OLDEST MEDICAL JOURNAL IN THE DOMINION.

Vol. XXXII }
No. 2 }

TORONTO, OCTOBER, 1899.

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(W. R. WARNER & Co.)

R Sulphite Soda, 1 gr.
Salicylic Acid, 1 gr.
Nux Vomica, $\frac{1}{8}$ gr.
Powd. Capsicum, 1-10 gr.
Concentrated Pepsin, 1 gr.

DOSE—1 to 3.

PIL. Antiseptic Comp. is serviceable in atonic dyspepsia, nervous dyspepsia—in fact, all forms of this disease, because it strengthens the lowered digestive vitality.

The Nux Vomica and Capsicum, besides promoting involuntary contraction of muscular fibre, relieve flatulence and constipation.

The digestive properties of the Pepsin, assisted by the action of the Salicylic Acid and Sulphite of Sodium, in addition to the above, make this an effective remedy.

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(W. R. WARNER & Co.)

A Most Satisfactory Method for
Prescribing Iron as Indicated in

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R Ferri Sulph.
Potass. Carb., aa $1\frac{1}{4}$ grs.
DOSE—1 to 2.

PIL. Chalybeate produces Ferrous Carbonate in the stomach, and mingling with the gastric juices is more quickly assimilated than any other preparation of iron.

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R Acid Salicylic. Ext. Phytolacca.
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DOSE—1 to 2.

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A POTENT, reliable remedy for the cure of Indigestion, Dyspepsia and Sick Stomach. Also a Specific for Vomiting in Pregnancy. Prof. Roberts Bartholow, M.A., M.D., L.L.D., in his work on *Materia Medica and Therapeutics*, says: "It is a Stomachic Tonic, and relieves Indigestion, Flatulence and Dyspepsia. It can be administered in inflammatory diseases of the mucous membrane, as it has no irritant effect." Physicians throughout the world have forwarded us testimonials of the reliance they place in Ingluvin, and state that the anticipated therapeutic effect is always forthcoming. If you are not familiar with it, we will forward you sample.

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Tono Sumbul Cordial

(W. R. WARNER & Co.)

R Nerve-tonic properties of Sumbul.
Blood-making " Iron.
Antiperiodic " Cinchona.
Acid Phosphates.
Aromatics, Sherry Wine, q. s.

Sig. Tablespoonful to be taken before meals.

Sumbul is particularly valuable in cases of a low, depressing character, and is the remedy par excellence for nervous, hysterical females who need building up. As will be seen, Tono Sumbul Cordial does not contain coca or any ingredient which might induce a drug habit, but is a superior tonic, used to advantage and discontinued with no after effects.

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Tr. Gelsemium, gtt. i. Sodii Bicarb.

The advantages of Elixir Salicylic Comp. are afforded by the combination of Salicylic Acid with Soda in excess, thus forming a salt less corrosive and irritating, and more readily borne by the stomach. Avoid imitations and substitutes.

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An active, palatable form of Sodium Phosphate, which, on account of its bland, gentle action and efficacy as a cholagogue, has become a widely prescribed preparation.

It is useful in

CONSTIPATION AND TORPID LIVER.

Its refrigerant saline action recommends Eff. Sodium Phosphate (W. R. W. & Co.) in all exanthematous fevers.

Used to advantage in all Nervous Diseases where the system is sub-normal.

DOSE.—One or two dessertspoonfuls. As a purgative, two dessertspoonfuls. As an alternative, one dessertspoonful. It is more efficient taken before breakfast or at bedtime.

“SPECIFY WARNER’S.”

Eff. Bromo Soda

(W. R. WARNER & Co.)

For Sick Headache caused by indigestion and over-indulgence.

Headache resulting from protracted mental effort and close confinement.

Headache due to loss of sleep and rest.

Dull Throbbing Headache from over-work and disordered stomach.

Headache from excessive use of tobacco or over-eating.

Bromo Soda will quickly relieve Neuralgic and Rheumatic Headache.

Where nervous depression follows deprivation of alcoholic stimulants, opium, etc., when habituated to their use, BROMO SODA is recommended with the utmost confidence as a prompt and certain remedy.

SEE THAT YOU GET NO SUBSTITUTE.

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AND (W. R. WARNER & Co.)

Eff. Vichy

(W. R. WARNER & Co.)

Afford an innocent remedy for the successful removal of superfluous flesh.

Acting on the suggestion of Dr. W. T. Cathell's recent contribution to medicine, we are offering to the profession Eff. Kissingen and Eff. Vichy as a convenient and economical method of administering these remedies, while the advantages over the natural waters lie in the fact that each dose is accurate and is composed of fresh water.

DOSE.—Heaping teaspoonful Eff. Kissingen, after meals, alternating every other day with same doses of Eff. Vichy.

We also put these remedies up in the form of an Effervescent Tablet, two tablets being one dose. To be taken after meals.

“SPECIFY WARNER’S.”

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(W. R. WARNER & Co.)

R Lithia Citrate, 5 gra.
Potass. Bicarb., 15 gra.
Soda Bicarb., 10 gra.
Acetanilid, 3 gra.

In each dose or two teaspoonfuls.

Lithia Salt Alkaline affords a most excellent means of ridding the blood of an excess of those acids upon which the above diseases depend.

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W. R. WARNER & Co.

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NEW YORK
CHICAGO

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FOR CONSTIPATION BILIOUS DISORDERS

SMALL
EFFECTIVE
EFFICACIOUS
NO GRIPING
NON-IRRITATING TO
HEMORRHOIDS

R Aloin, $\frac{1}{4}$ gr.
Ext. Bellad., $\frac{1}{8}$ gr.
Strychnine, 1-60 gr.
Ipecac., 1-16 gr.

DOSE—1 to 2.

Pil. Peristaltic Mercurial

(W. R. WARNER & Co.)

Same formula as Pil. Peristaltic,
with 1-10 grain Calomel added.

Liquid Pancreopepsine

(W. R. WARNER & Co.)

THIS preparation (sometimes termed "Digestive Fluid") contains in an agreeable form the natural assimilable principles of the digestive fluids of the stomach, comprising Pancreatine, Pepsin, Lactic and Muriatic Acids.

The best means of re-establishing digestion in enfeebled stomachs, where the power to assimilate and digest food is impaired, is to administer remedies capable of communicating the elements necessary to convert the food into nutriment.

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(W. R. WARNER & Co.)

R Phosphorus, 1-100 gr.
Ferri Carb., $1\frac{1}{2}$ grs.
Asafetida, $\frac{1}{2}$ gr.
Ext. Sumbul, $\frac{1}{2}$ gr.
Ext. Nux Vomica, 1-10 gr.

DOSE—2 tablets before meals for adults.

By glancing at the above it will be seen that in Nervitone Tablets we offer a combination of well-known nerve tonics and stimulants. It is a tablet that will cover a wide field of usefulness in physicians' prescribing. When the indications are for a prescription to correct conditions due to asthenia, neurasthenia or nerve exhaustion, whether the result of debilitating diseases or excesses, we have in Nervitone Tablets a remedy which will give satisfactory results.

The drugs used in the manufacture of this pill are pure and active.

Pil. Digestiva

(W. R. WARNER & Co.)

COMPRISES a combination of remedies for the treatment of all forms of indigestion, whether due to an enfeebled digestive tract, faulty secretion of gastric juices, or indiscretion in matter of diet or stimulants.

R Pepsin Concentrated, 1 gr.
Pv. Nux Vom., $\frac{1}{4}$ gr.
Gingerine, 1-16 gr.
Sulphur, $\frac{1}{2}$ gr.

DOSE—1 to 2.

AN EXCELLENT AFTER-DINNER PILL.

WM. R. WARNER & CO.,
Philadelphia. New York. Chicago.

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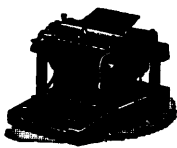
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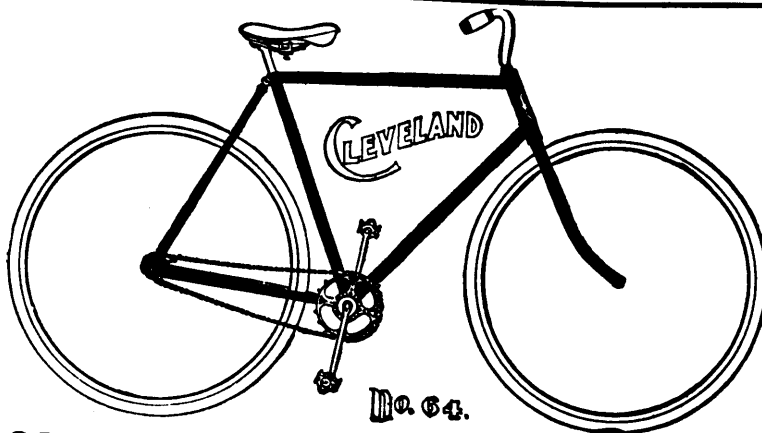
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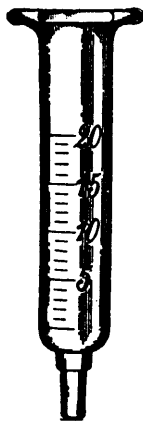
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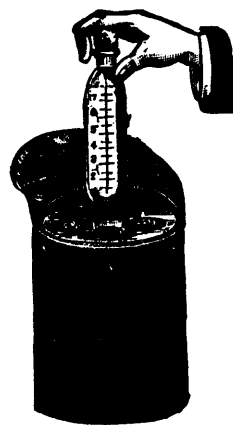
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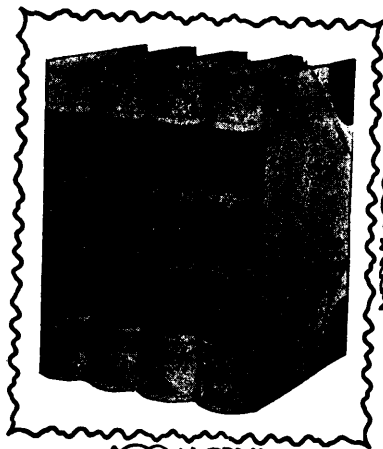


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THE ASSOCIATION OF PELVIC DISEASE AND INSANITY IN THE FEMALE.

BY DR. ERNEST HALL, TORONTO.

Not a little has recently appeared in the medical press upon the subject of the relation between pelvic disease and abnormal mentality, and much remains to be written before any unanimity of opinion can be reached. A satisfactory solution is beyond the limits of the possible so long as our investigations are restricted to the narrow limits of present facilities. The ploughshare must cut deeper into the unbroken fallow-ground or the mass of material which constitutes the neglected invalid's confined in our state institutions; to these institutions the public look for specialization with its consequent advantages, and with few exceptions they look in vain. So long as our political life is but the sum of the combined activities of the "boss" just so long may we expect to see party loyalty take precedence over scientific training and professional skill, and while we wait the evolution of rationalism in public matters we must not overlook our more immediate duty towards this unfortunate class. Few in active practice pass many months without having a case of insanity presented to their notice, and fewer still seem to realize that the patient is ill physically. Too many act as if the development of disturbed mentality marks the limit of their medical jurisdiction instead of its being the mute, but earnest call to painstaking care and deeper investigation. We recognize in the delirium of acute disease the local irritation, sympathetic connection, or systemic toxæmia, and expect with the return of the physical to the normal, that the mental will also reassert itself, then why should we, simply because pulse and temperature are wanting in their febrile manifestation consider the patient as suitable only for asylum treatment. The insane patient deserves our most anxious thought and our best powers. The keenest diagnostic ability is here demanded and the best skill our profession can produce, but what is the usual method of procedure? An enquiry into the psychic manifestations only, commitment to the state institution, there to improve or the reverse, to live, or die as the case may be perhaps without one serious enquiry into the primary physical disease.

While we wish to call attention to the prevalence of pelvic disease in the subjects of insanity, it is not to be supposed that disease of these parts is more potent in such causation than that of any other part of the body, except as such parts are in a more direct and possibly unique connection with the sympathetic nervous system or are more exposed to abuse, traumatism, or to the invasion of septic bacteria, but since these considerations apply more directly to the pelvic organs (possibly at times over stated) are we not justified in affording to disease of these organs a somewhat prominent place in the causation of mental abnormality? However speculate as we may the frequent association of the conditions referred to is a matter of no little interest. The proving or disproving of the theories suggested in the future.

My results are yet too recent to be of much value (except to the patients and their friends), I will merely give a brief statement of the pathological conditions found upon physical examination. I have reported only such conditions as in the same would be considered sufficient to demand treatment.

Cases examined 71, married 53, unmarried 18. Disease found in 67. Of the four with normal pelvic organs, two were married and two unmarried.

The following conditions were found:

Adhesion of clitoris.....	3 times.
Cytic ovaries.....	18 "
Adhesions of pendages.....	23 "
Retroversion simple.....	4 "
Retroversion with adhesions.....	8 "
Laceration of perineum.....	22 "
Laceration of cervix.....	24 "
Varicocele pampinniform.....	5 "
Undeveloped organs.....	1 "
Subinvolution.....	3 "
Tubo ovarian abcess.....	1 "
Endometitis.....	7 "
Prolapsed ovaries.....	1 "
Peri ovaritis.....	1 "
Hæmatoma of ovary.....	1 "
Elongated cervix.....	1 "
Atresia cervix.....	1 "
Antiflexion acute.....	1 "
Cervical polypus.....	1 "
Fibroid tumors.....	2 "

In all one hundred and twenty-eight distinct pathological conditions with a percentage of 94% of the cases found diseased.

Is not the condition here indicated sufficient to call the attention of those interested in the administration of provincial institutions. Progress is being made in not a few places, but there are asylums within our Dominion presided over by superintendents who apparently ridicule

the possibility or even of our contentions being indicated, or our theories confirmed. We are either right or wrong, let the truth be arrived at by legitimate methods of investigation. The results of a few working independently is incomparable in value to that which would flow from the combined investigations of those in charge of the hospitals for the insane. We have given statistics, made statements and charged the authorities with neglect (not necessary wilful) and now we ask for verification or the reverse. In the name of suffering invalidism, mute in its bonds of unspeakable anguish, we ask that a searching inquiry be made into this matter by the proper authorities and the question of the relation of pelvic disease to insanity be afforded at least a partial solution.

TRINITY MEDICAL SCHOOL OPENING.

The session of 1899-1900 at Trinity Medical College was inaugurated on Tuesday October 4th at 4 p.m., by the time-honored custom of an opening address, delivered this year in the College theatre by the Rev. Dr. Clark of Trinity University. Among those present were Provost Welch, Professor Mackenzie and Professor Young of Trinity College, Rev. Armstrong Black, Dean Geikie, and the members of the Medical Faculty.

The theatre was filled by the friends of the College and the undergraduates, the latter enlivening the proceedings after their most approved fashion. In his introductory remarks Dean Geikie referred in appropriate words to the loss sustained by the College during the past session in the death of an old and honored colleague, Prof. Thomas Kirkland. The Professorship of Chemistry left vacant by his death has been filled by the appointment of Prof. Stuart, whose acceptability to the students was well shown by the applause which greeted the mention of his name.

Prof. Clark spoke in his usual happy style, giving some wholesome advice to the students, with whom he is a great favorite. He paid a tribute to the gentleness, honor and kindness of the medical profession, and urged upon the undergraduates to maintain the high ideals that had been set.

The regular classes began on Wednesday with a large number of freshmen.

Tales of an overcrowded profession evidently have no effect in lessening the numbers of those anxious to enter its ranks.

THERAPEUTICS: PAST, PRESENT AND FUTURE.

BY GEORGE F. BUTLER, M.D., CHICAGO, ILL.

The history of medicine during the early epoch which marked the awakening of scientific thought is enveloped in baffling obscurity; myth and tradition of necessity supplying the place of more intelligent investigation. Notwithstanding perplexities, however, it is of profound interest to the modern student to trace the far distant sources of therapeutic knowledge, examine attentively the gradual development of the healing art, and in the brilliant achievements of the nineteenth century recognize only the flower and fruitage sprung from the seeds of progress and planted in the human mind in remote ages—yes, even in the dawn of civilization. Moreover, the retrospective study of medical science can but enhance our veneration for the struggling intellect of man, and enable us to form a more adequate conception of the patience and labor which have marked the evolution of a physician's attainment.

Such considerations occur to one who looks deeply into the annals of the past, striving to discern so far as existing records permit the earlier status of therapeutics.

It has been philosophically remarked that the progress during the present century, familiar to all, has been marked by the employment of inductive methods of reasoning in the departments of physiology, pathology, and clinical medicine. By the results of such methods and the development of a scientific habit of thought, the science of medicine, which is that of physiology in its broadest sense, the physiology of health as well as the physiology of disease, including the effects of drugs, can well fill its minor place in the science of biology. The old cry of the uncertainty of medicine, the unscientific character of the art of medicine, cannot be held up to us. No Montaigne can at this day hurl the shafts of ridicule and satire that stung to the quick and stimulated honest doubt in the sixteenth century. Well do we know, ourselves, our limitations as well as our power, and with becoming modesty do we uphold the claims of medicine as a science. If science is "knowledge gained by systematic observation, experiment, and reasoning; knowledge, co-ordinated, arranged, and systematized," well fortified is he with cynicism who has the hardihood to maintain the contrary.

The many achievements which have established the present advanced status of medicine are too familiar to require detailed rehearsal. The study of pathology has attracted new and world-wide attention, accompanied by wholly unprecedented results and a skill in scientific investigation of incomparable value to mankind. A greater knowledge of etiology, a larger comprehension of the systematic rationalism of the times, and a more rigid adherence to the scientific truths revealed by practical observation, have served to place the medicinal art upon a loftier

plane of human understanding. Our century opened with a sound preference for inductive research over the less valid generalizations of the past. Virchow, Cohnheim, Koch, Lister, Pasteur, Bernheim, Kitasato, and hosts of other ardent investigators have deftly explored the arcana of chemical, physiologic, and biologic research. Specialists of remarkable acumen have revealed to an astonished world secrets of nature which may be, and indeed are now, of vast importance to the welfare of mankind. Foremost among the new and startling discoveries must be regarded the mysterious yet indubitable effects produced by antitoxins, and their influence upon certain infectious diseases. A consideration of the matter is therefore pertinent.

Great progress has been made during the past year in the field of serum-therapy, though much remains open to question, and many things cannot yet be explained. The field for the investigator is perhaps larger than ever before. For a better understanding of the antitoxins and their therapeutic application, a few essential facts should be borne in mind. An antitoxin is not the direct result of bacterial action, but is properly described as an unknown body resulting from the resistance of healthy organism to the toxins of pathogenic bacteria. In practice this antitoxic body comes to us in the blood-serum of animals, usually the horse. When properly prepared and properly kept in aseptic containers, the antitoxins are not all dangerous—in fact, are as innocuous as an equal amount of blood-serum or normal salt solution administered in the same way. We use antitoxins to resist the effects of infection with pathogenic bacteria, because the results of such infection are due to the toxins elaborated by those bacteria, and not to the bacteria themselves. The antitoxins do not destroy the bacteria—in other words, are not germicides. In fact, the antitoxic serums are themselves good culture media. One theory of their action is that they neutralize the toxin, thus giving the natural bactericidal powers of the body an opportunity to exercise their function.

The following brief description of the process employed in the laboratory of Parke, Davis & Company will, I trust, show that I am justified in the above definition of an antitoxin.

Young horses in perfect condition are selected and kept under careful observation by an expert veterinarian for three or four weeks. Temperature is taken three times a day for two weeks, and during this time they are carefully tested with mallein for glanders. When a horse is found to be perfectly healthy, he is taken into the stables with the other antitoxin horses, and there receives his first dose of diphtheria poison, or more properly a solution of the toxin of the Klebs-Loeffler bacillus. This is obtained in the following manner: A culture is obtained from the throat of a patient suffering from a virulent attack of diphtheria. The Klebs-Loeffler is isolated from this culture and planted in a flask of bouillon, which is kept in an incubator for ten days. At the end of this time it has attained its maximum toxicity, and the bacteria begin to die of their own poison. The toxin which they have elaborated in the course of their existence is held in solution by the beef tea, trikresol added. This bouillon solution of toxin is then filtered through porcelain to remove the

bacterial cells and any other extraneous matter. It is then ready for injection into the horse. About one-tenth of one cubic centimeter is injected subcutaneously. The horse responds with all the constitutional symptoms of diphtheria, such as a chill, fever, loss of appetite, more or less pharyngeal paralysis with regurgitation of food, and occasionally death of heart paralysis. Upon recovery, which comes within a few days, he is given a slightly larger dose. This treatment is continued for about one year, when he will take from 2,000 to 3,000 times the initial dose without reaction. He is then ready for bleeding. About 6,000 cubic centimeters of blood is drawn from the external jugular vein. This is allowed to clot, and the serum obtained is what is known commercially as antitoxin. Cultures are made from this for the detection of any possible contamination. If there is no contamination present, it is siphoned off into the glass bulbs, in which it appears in the market, first having 0.4 per cent. trikresol added. After standing a few days to allow the development of bacteria, should any be present, cultures are again carefully made, and if these show presence of bacteria in the serum, the whole lot is destroyed. If it is free from contamination, it is ready for the market.

In making the streptococcus antitoxin a culture is made of bacteria obtained from two sources—erysipelas and puerperal septicemia. This is done because Marmorek, Paltauf, and some other eminent bacteriologists believe that streptococci of various infections belong to different families—that the streptococcus of erysipelas is not identical with the streptococcus puerperal fever. It is but fair to say that others equally eminent do not hold this view. To cover this point, the cultures obtained from the two sources are used. The virulence is increased by passing through rabbits. After passing through about fifty rabbits, a culture is planted in beef tea, and the same course pursued as for diphtheria antitoxin. Antitubercle serum is obtained by immunizing horses with the original Koch's tuberculin.

In support of the proposition that the symptoms in infectious diseases are due to the toxins elaborated by bacteria and not to the bacteria themselves, the following quotation from the latest edition of Sternberg's *Manual of Bacteriology* is given:

“Certain saprophytic bacteria when injected beneath the skin of a susceptible animal multiply at the point of an inoculation and invade the surrounding tissues, giving rise in some instances to the formation of a local abscess, in others to an infiltration of the tissues with bloody serum, and in others to extensive necrotic changes. These local changes are due not simply to the mechanical presence of the micro-organisms which induce them, but to the chemical products evolved during the growth of these pathogenic bacteria. Indeed, their pathogenic power evidently depends, in some instances at least, upon these toxic products of their own growth, by which the vital resisting power of the tissues is overcome. Other bacteria, while they develop chiefly in the vicinity of the point of entrance—by accident or by inoculation—produce a potent toxic substance which gives rise to the general symptoms of a serious character, such as tetanic convulsions (bacillus of tetanus), or intense fever and nervous

phenomena (micrococcus of erysipelas). The pus cocci and various other saprophytic bacteria, when introduced beneath the skin, give rise to the inflammation of abscesses, unattended by any very considerable general disturbance; and also to secondary purulent accumulations—metastatic abscesses.

“That this is not due simply to their mechanical presence is shown by the fact that powdered glass and other inert substances, when thoroughly sterilized, do not give rise to pus formation when introduced beneath the skin or when injected into the cavity of the abdomen. On the other hand, it has been demonstrated by the experiments of Grawitz, De Bary, and others that certain chemical substances which act as local irritants when brought in contact with the tissues may induce pus formation quite independently of micro-organisms; nitrate of silver, oil of turpentine, and strong liquor ammoniæ have been shown to possess this power. And it has been demonstrated by the recent experiments of Büchner that sterilized cultures of a long list of bacteria—seventeen species tested—give rise to suppuration when introduced into the subcutaneous tissues.

“In diphtheritic inflammation of mucous membranes we have a local invasion of the tissues and a characteristic plastic exudation. In true diphtheria the local inflammation and necrotic changes in the invaded tissues are not sufficient to account for the serious general symptoms, and we now have experimental evidence that the diphtheria bacillus produces a very potent toxic substance to which these symptoms are no doubt largely due. The diphtheria bacillus of Loeffler appears to be the cause of the fatal malady which goes by this name, but undoubtedly other microorganisms may be concerned in the formation of diphtheritic false membranes.”

In addition to the valuable information afforded us by Dr. Sternberg, additional evidence as to the correctness of this conclusion is the fact that horses, while being immunized, give the classical constitutional symptoms of each disease, though they are treated with the filtered toxin which contains no bacteria whatever. A possible exception may be made of anthrax, though Sternberg distinctly states that it acts in the same way

As to the therapeutic action of antitoxin, little or nothing is known positively. It seems reasonable to conclude from experimental evidence that the antitoxin neutralizes the toxin in the body, and thereby gives the natural germicidal powers an opportunity to dispose of the bacteria. It may be that it has the additional property of stimulating phagocytic and possibly other bactericidal functions. The following experiments made by Messrs. Martin and Cherry, in England, and described in an editorial in the *Journal of the American Medical Association* of August 27, 1898, will be of interest in this connection. Behring, Ehrlich, and Kanthack have advocated the theory that the antagonism between toxins and antitoxins is a chemical, somewhat analogous to the neutralization of an acid by an alkali, while Büchner, Metchnikoff, and others have maintained that it is indirect and operates through the cells of the organism. Martin and Cherry used a snake-venom antitoxin. A considerable number of guinea-pigs were used. At 68° C. the antitoxin was

destroyed, while the venom retained its virulence. In the control experiment with the venom only, all the animals died within a few hours. A number of mixtures were made of one cubic centimeter of antitoxin with twice the fatal dose of venom; others with three and four times the fatal dose. These mixtures were allowed to stand at the usual laboratory temperature (20° to 23° C.) for two, five, ten, fifteen, and thirty minutes respectively, then heated to 68° C. and then injected.

As above remarked, this heat destroyed the antitoxin, so that none was injected. The animals subjected to the mixture of the stronger doses of ten minutes or less died, or were seriously affected; all of those receiving the fifteen-minute mixtures survived, while the thirty-minute mixtures produced no symptoms whatever. Similar results were obtained with diphtheria antitoxin and toxin. These experiments seem to show as far as anything can that the neutralization of toxins may occur in the test-tube, and that the vital processes in the organism and the body cells are not essential. These gentlemen made further experiments by passing a mixture of toxin and antitoxin through a film of gelatin on a Pasteur-Chamberland filter. This was porous for toxin, but not for antitoxin, owing to the difference in the size of their molecules. The toxin which passed through the filter, after having been mixed with antitoxin, was neutral. The unavoidable conclusion from this experiment is that the toxin was neutralized before filtration.

Further experiments were made to prove their theory that toxins are albumoses and antitoxins, globulins, but their experiments do not appear to be conclusive.

The supposition that the administration of antitoxin is followed by a stimulation of the germicidal powers of the body seems to be reasonable, at least in the case of the antistreptococcic serum, since the streptococci disappear with the passing away of the signs and symptoms. On the other hand, the Klebs-Loeffler bacillus is found in the throat for weeks and even months after the disappearance of all symptoms of diphtheria in cases treated with the antitoxin.

The present status of diphtheria antitoxin may be presented in a few words. It has established itself as a specific in the treatment of this disease. During the past year the use of larger doses has become more general, and it seems certain that better results are obtained. The administrators of the Chicago Department of Health give two thousand units in all cases of suspected diphtheria, and employ one thousand units as an immunizing dose. During the months of November and December this department treated 219 cases of bacteriologically proven diphtheria, all charity cases, with a death-rate of 4.1 per cent. Some two and a half years ago, when antitoxin was not used, the death-rate from diphtheria treated by this department was about 35 per cent.

A considerable number of reports have been published showing good results in the use of diphtheria antitoxin in other diseases, as asthma, acute bronchitis, etc. Its favorable action in these conditions cannot be satisfactorily explained. Dr. McClintock says that possibly the natural

immunity of the horse against these diseases will account for the favorable action of his blood-serum in these diseases. In other words, Dr. McClintock thinks its therapeutic action in these conditions is due to the blood-serum, and not to the diphtheria antitoxic body present in the serum.

Antistreptococcic serum gives promise of being second only to the diphtheria antitoxin in point of therapeutic value. It has been most successful in erysipelas and puerperal septicemia. Cases of scarlet fever are reported where it has been useful in shortening the duration of the disease, and in preventing unfortunate complications and sequelæ, such as otitis media and other suppurative processes due to streptococci.

A valuable contribution to the literature on this antitoxin was made by Dr. W. L. Baum, of Chicago, and published in the January number of *MEDICINE*. A perusal of this essay will repay any one interested in the antitoxin treatment of disease. Dr. Baum reports twenty-two cases coming under his observation in which the serum was used. "Of these nineteen were cases of erysipelas; one of erysipelas plus tubercular nuchal glands; and one of erysipelas with puerperal septicemia and double labial abscess. The last was the only fatal case. In four of the cases of erysipelas only one injection of the serum (10 cubic centimeters) was used, with a reduction of temperature to the normal within twenty-four hours; no relapse. In six others four injections of 10 cubic centimeters each were given upon consecutive days, with a rapid recovery on the fifth day; no relapse. In three the injections were followed by a reduction in temperature within twenty-four hours, but relapsed at intervals of from three to six days. In all of these cases the serum was again used. In one, repeated injections seemed to exercise no effect upon the temperature, and the treatment was followed by sponging, which seemed more effective. The others were old cases in which there had been a marked tendency to relapse; in these not only was the temperature reduced, but the cases showed rapid improvement and recovery. During this time many other cases of erysipelas were under treatment at the hospital, but an effort was made to select those cases which were characterized by high temperature or complications."

Dr. Baum also speaks of Baginsky's report of results in forty-eight cases of scarlatina, in which antistreptococcic serum was employed. In twenty-seven the course of the disease was unusually favorable, the majority recovering without complications. A striking feature in all was the rapid reduction of temperature. In exceptional cases albumin appeared, and a single case had nephritis with tube-casts and blood-corpuscles. In a second group of cases of a severe type the results were not so favorable, although it is possible that in these the amount of serum employed was insufficient. Among the whole number of cases there were seven deaths, or 14.6 per cent. which compares favorably with the percentages (between 22.6 and 24.4) in the years from 1890 to 1895. The mortality among cases treated by other means during the same epidemic as that in which the serum was employed was 24.9 per cent. The untoward effects of the injections were similar to those observed after

injections of diphtheria antitoxin. The future for this serum in the treatment of chronic phthisis is bright with hope. We are told that in the majority of cases simple uncomplicated tuberculosis of the lungs is not a dangerous disease—that it is the added infections, such as streptococcic, staphylococcic, the yeast fungus, and others, that kill. Dr. Robert Reyburn, of Washington, D. C., makes the statement that the vast majority of persons over sixty years of age who die from any cause have had tubercular deposits in their lungs. The fact that post-mortem examinations in public hospitals and other public institutions show tuberculosis lesions in the majority of subjects would indicate that tuberculosis in the lungs is usually a self-limited disease. Of these complications the most frequent, and probably the most important, are the streptococci. In a few cases where the antistreptococcic serum has been used the reports have been almost uniformly favorable. However, its value is not by any means demonstrated.

It is to be regretted that tetanus antitoxin does not in clinical use do all that it will do in the laboratory. It has been used in a considerable number of cases, but in nearly every instance without any result that would justify us in regarding it as a great curative agent. However, it should be used early in every case of tetanus, and in large doses, because it is, like the other serums, harmless, and the patient has a somewhat better chance for recovery.

Not until our means of diagnosis have been improved by bacteriological methods or otherwise can we expect great results from the tetanus antitoxin. The following explanation for inefficiency of this antitoxin has at least the merit of originality on the part of its author, and some plausibility: "The toxin of the tetanus bacillus has a chemical affinity for nerve tissue, and enters into chemical combination with and destroys such tissue, and it is this chemical combination and destruction in the nerve centers which produces the tetanic convulsions. The antitoxin has no such chemical affinity and neutralizes only that toxin remaining in the blood-current, and of course it cannot repair the nerve tissue lesion. When we are able to diagnose tetanus early, the antitoxin will be used successfully treated with intracerebral injections of antitoxin, the theory being that the antitoxin should be placed where it could neutralize the toxin which is producing the convulsions by means of its action on the nerve centers. The value of this method of administration has not been proven fully, as many cases have been treated unsuccessfully."

As a preventive measure, the tetanus antitoxin is all that can be desired. Dr. Joseph Hughes, one of the most eminent and conservative veterinary surgeons in Chicago, says that he has used the tetanus antitoxin as a prophylactic in over five hundred cases following wounds both surgical and accidental. Not one has developed the disease, though he has used it where he was justified by former experience in expecting tetanus to show itself. Dr. Hughes uses ten cubic centimeters as a protective dose and injects it five to seven days after the suspected inoculation.

The time has come when it is the duty of every railroad company to authorize the use of this serum as a prophylactic by its surgeons. It

should be used by every surgeon treating wounds liable to be infected with the bacillus tetanus. It costs a very small amount of money to protect a man absolutely against this terrible disease.

The antitubercle serum has not proven itself of more value than a great number of other remedies vaunted as specifics in this disease. Maragliano, of Italy, continues to send encouraging reports, and has recently erected a tuberculosis hospital in or near Rome where his antitoxin is to be used. It must be confessed, though regretfully, that this serum has not been a marked success in this country.

The bacteriologists of the Chicago Department of Health are at present studying the bacillus of influenza, which they have succeeded in isolating. Though it is a long journey from the discovery of a bacterium to the successful production of an antitoxin to the effects of that germ, still it is a matter of interest to know that the exact cause of the dread epidemic is at last known.

These scientists are now in the midst of a thorough investigation of the bacteriology of scarlet fever.

When using antitoxin, the necessity of obtaining serum of a reliable manufacturer cannot be too strongly urged. Everything depends upon the laboratory. For instance, we cannot tell from the appearance of a package of serum whether it contains one hundred units or one thousand units, or none. We cannot tell whether it comes from a healthy animal or whether it was contaminated with bacteria when bottled, or whether it has become contaminated after leaving the laboratory. Only that put up in hermetically sealed bulbs is absolutely free from the possibility of contamination.

Foreign serums have shown themselves to be inferior to the American in some respects. This is due, first, to the fact that the foreign antitoxin has been shipped a long distance; secondly, the technique of production is not so perfect; and thirdly, the European manufacturer regards the market in the United States in the light of an orange to be sucked as dry of profit as possible in the shortest time. In the March number of *Pediatrics* is a report which says that the serum on the London market in 1897 was a worthless article; that one German house supplied in London an antitoxin which was warranted to contain one hundred units, but which in experiment gave only 17.5, while another sold as containing 200 units gave only 30 units. Only a short time ago there was current an able-bodied rumor to the effect that German manufacturers were sending to this country diphtheria antitoxin which had been rejected by their own government. The vast majority of unfavorable reports on the use of the antistreptococic serum have come from European physicians or from physicians of this country who have used the foreign serum. The European manufacturer does not take so long a time to immunize his horses, and does not usually possess so virulent a toxin for immunizing purposes. Then, too, the foreign serum is necessarily subjected to many and great changes of temperature incident to long transportation, while wending its devious way from the European laboratory to the

American physician. While the American laboratories are willing to exchange old serum for fresh, the foreigner of course cannot do this, and after his serum has become too old it is a dead loss to the physician or druggist, or is injected into the patient sometimes with unfortunate consequences.

The action of Professor Emil Behring in obtaining a patent on diphtheria antitoxin and his present efforts to obtain a patent on tubercle antitoxin, have justly met with the decided disapproval and condemnation of every American physician who has any belief in the ethics of the profession. Various medical societies, including the Mississippi Valley Medical Association, the Chicago Medical Society, and many others, have passed resolutions expressing their indignation, and promising their active support to the American manufacturers who are engaged in litigation with the owners of the patent. Perhaps no subject has been taken up so promptly by the medical press. Every one of the best periodicals has had at least one editorial scoring Professor Behring in the severest terms.

Permit me to add to the foregoing detailed treatment of serum therapy a few considerations touching another instance of progressive medicine—our improved knowledge of the laws governing the science of pharmacology.

A great step in the advancement of the science of pharmacy is the accurate estimation of the activity of various drugs by testing them upon living animals. This is known as the physiological assay. For some years the better class of manufacturing pharmacists have made a chemical assay of the various drugs amenable to such an examination. It has long been known, however, that the activity or strength of many drugs, such as *cannabis indica*, ergot, *strophanthus*, and *digitalis*, cannot be determined by the chemist. For instance, ergotin does not represent the therapeutic value of ergot, nor does *cannabin* represent that of *cannabis indica* nor *digitalin* that of *digitalis*. Unfortunately the drugs of this class are the very ones which vary most widely in their activity, and are also the ones which the physician gives most carefully, and from which he wishes to obtain the most definite results. By the physiological assay the manufacturer tests each lot of drugs on a number of animals and does not allow the product to leave his laboratory until he has obtained definite results. The conclusion is inevitable that the physician will obtain his results much more surely with preparations so standardized than he will with those which have not been assayed. A brief description of the method of these physiological tests as given by Dr. E. M. Houghton is interesting.

From times prehistoric it has been observed that in fowls, swine, and other animals, as well as man, fed with ergotized rye or with bread prepared from the flour of such grain for a considerable length of time, the poisonous action of the fungus is frequently manifested by gangrene and sloughing of the peripheral parts, as the comb of fowls, ears of hogs, and ears, nose, fingers, and toes of man. Two particular types of ergot poisoning have been observed, namely, *ergotismus gangrenosus* and *ergotismus spasmodicus*. Kobert and his pupil Grünfeld were the first to

employ the feeding of ergot to roosters in order to determine the activity of the crude drug or of the products isolated from it. However, these investigators employed the action only for experimental purposes.

In making the preparations of ergot, the carefully selected crude drug is tested by being fed to roosters, a certain number of grains to a certain weight of fowl. If it is of normal activity, it produces the local effect in the comb and wattles. This drug is then carefully exhausted with the proper menstruum, and the finished product is again tested in the same way. About one-third of the ergot thus tested is found to be inert. If the finished product proves itself below the standard, more of the drug is exhausted with the same menstruum.

The therapeutic importance of the heart tonics—*digitalis strophanthus*, and others of the group—is now recognized, and these drugs are universally employed by physicians in their daily practice. We are not generally accustomed to think of the heart tonics as being the most poisonous remedies employed in therapeutics, yet it is true. According to some of the best authorities, the maximum dose of extract of *digitalis* is about one-half as great as the maximum dose of extract of belladonna; while *strophanthin*, the active principle of *strophanthus*, is three times as poisonous as atropine, ten times as poisonous as strychnine, and twelve times as poisonous as absolute hydrocyanic acid. It would be considered dangerous pharmaceutical practice to allow preparations containing atropine, strychnine, or hydrocyanic acid to be sold without first being subjected to careful chemie assay and standardization. The United States Pharmacopœia gives elaborate methods for the exact quantitative determination of these constituents; while owing to the fact that the obtained active principles of the heart tonics are glucosides so easily decomposed by chemie manipulation that an assay cannot be made, no directions whatever are given for the determination of the physiologically active properties of the galenical preparations of these drugs, and the tests for the purity of the respective glucosides are of little value. I shall speak of the physiologic assay of *strophanthus*, its active constituent *strophanthin*, and its pharmaceutical preparations. These will serve as types. About thirty varieties of *strophanthus* have been discovered. It is claimed that only six varieties contain *strophanthin*, while a few contain a still more active glucoside, ouabain. As found in the American markets, the drug generally consists of a varying mixture of the seeds of *Strophanthus Kombe* and *Strophanthus hispidus*. Preference is generally given to *Strophanthus Kombe*, since it contains about 0.95 per cent. *strophanthus*, while *Strophanthus hispidus* contains about one third less. The amount of contained *strophanthin* is partly dependent upon climatic conditions. It is a well known fact that the physiologic activity of *digitalis* leaves varies within wide limits from year to year. Holmes, of London, who has given this matter much attention, claims that only by purchasing the seeds in the follicle and testing a seed from each follicle can a reliable preparation of *strophanthus* be made. An assay based on the amount of extractive contained in a given tincture is of little value to the physician, since the extractives consist largely of chlorophyll and other inert substances.

In making a qualitative assay a solution of the crude drug or its active constituent is applied to the laid-bare frog's heart, and the slowed rhythm, the less and less perfect diastole, the increased systole, and finally complete inhibition in systole, are noted. Intravenous injections of such solutions into dogs and rabbits are made with careful observation of the variations in blood pressure and heart-beats, as shown by graphic tracings reported on the kymograph.

A quantitative estimation by pharmacologic methods is a much more difficult problem. Many series of experiments were necessary in order to decide what method is best for this work. Finally, the most practical method was found to be the determination of the minimum fatal dose on lower animals. Accordingly, rabbits, guinea-pigs, rats, frogs, etc., were employed, the frogs being finally chosen as the best adapted for the purpose. Different species of frogs vary considerably in reaction to the poisons, but the same species behave much alike. The method of administering the poisons and observing results may be briefly stated as follows: The strophanthin or tincture of strophanthus is dissolved in normal salt solution in such strength that the total quantity to be injected shall not exceed five cubic centimeters. The fluid is injected through the frog's mouth into the abdominal lymph sac. Great care is taken not to puncture the skin, as this will allow a portion of the injected fluid to leak out. After injection, the frogs are placed in wide frog glasses, the plates containing about a quarter of an inch of water. Several series of five frogs each are injected for each sample of the drug to be assayed, the first series to be injected with a drug of known standard strength. The second series is injected with doses varying considerably in size. The third series is injected after the approximate dose of poison has been found from the second series. From the third series the minimum dose is almost surely fixed. A fourth series is finally injected, which fixes the limit of strength very closely. The minimum fatal dose should kill at least three frogs out of five. If a less number die, other series are injected with slightly increased doses.

A series of fourteen experiments made with tinctures prepared from different lots of the seed as found on the market showed the fatal dose of the strongest to be .00010 cubic centimeter per gramme of body weight, and of the weakest to be 0.33 cubic centimeter per gramme of body weight. Samples of strophanthin were obtained from three of the best manufacturing chemists in the world. These were supposed to be pure strophanthin, yet one was ninety times as strong as another, the others varying between these limits. The digitalin varies greatly in strength, but much less than strophanthin. Both strophanthin and digitalin are given daily in tablet or pill form, the amount of active ingredient being apportioned by weight—a splendid opportunity for the sudden termination of a favorably progressing heart case should the patient happen to have the prescription refilled from a fresh bottle. The only way that such remedies can be taken with any degree of safety is to have them prepared from stock of known physiological strength.

The drugs assayed by the physiological method are: Ergot, cannabis indica, digitalis leaves, strophanthus seeds, convallaria majalis, elaterium, and cocaine. It is worthy of note that of the crude drug cannabis indica about 50 per cent is found to be inert.

We have traversed—albeit cursorily when we consider the magnitude of the theme—the vast field embraced in the history of medicine. In closing the subject a retrospective glance will show the magnificent achievement of the present day compared with the crude knowledge of former centuries. The acquisition of knowledge, however, is like the ascent of a mountain—the higher the point attained, the wider the horizon and the less definite our preception of details. We have, it is true, reached a clearer, purer atmosphere: yet, as the law of compensation presses upon us, we must constantly devise new methods of scientific conquest. As the telescope has overcome space, let us hope that no minutiae of medical knowledge will forever resist the genius of patient investigation in the domain of therapeutics.

“Medicine has for its object the relief of suffering and the prolongation of life. There exist many limitations to the successful accomplishment of this object. The limitations of medicine are less numerous to-day than in the past, and many of the obstacles to success in the prevention of disease and the healing of the sick will be removed in the future.

“Medicine, as a whole, is not a science. Of some branches which enter into it our knowledge is exact, of others our information is theoretic, while every day adds to our knowledge and removes many obstacles from the path of progress. The chemic laboratory and the microscope have done much and will do more to make medicine a science. Progress in knowledge of chemistry and biology has been wonderful in the last twenty years, and this knowledge has removed many of the limitations of medicine. Strange as it may seem, the limitations of medicine which man is striving to remove are due to man himself.

“Man is the highest type of animal, endowed with a mind capable of reason, and gifted with a means of communication with his fellows; and yet man is the very source of his own undoing. The original man was doubtless perfect in mind and body, the master of all created things. Like all organic life, his span was made up of periods of birth, growth, maturity, and decay. He was doubtless able to combat his foes, and sink at last, in the fulness of his years, into euthanasiac sleep. The history of man since the fall is like the repeated pages of a book. Vicious habits mark his footsteps, whether civilized or barbarian; his habits of work and of rest, his food and drink, are not rational; he contaminates the air he breathes, the water he drinks and the food he eats. The water sources and the earth, contaminated by man, become soil for the growth of the germs which infest and sicken him. His contaminated body begets a prototype, imperfect in mind and body. From the cradle to the grave a degenerate being, he fights against a mighty host, bred of his own shortcomings. Most of our infectious and contagious diseases may be classed as preventable; most of them are filth diseases, and they cannot exist in the presence of perfect cleanliness.”—*Medicine*.

RECTAL IRRIGATION IN GYNECOLOGY.*

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The theory of rectal irrigation in itself admits of no new view, but its recent employment by specialists marks a distinct advance in routine methods, and furnishes a valuable acquisition to local therapeutic and mechanical measures in gynecological practice, both before and after operative procedures. No apparatus yet devised for this specific purpose so scientifically meets the requirements as Kemp's tube, introduced to the profession some two years ago. Rectal irrigation will never supersede vaginal douching, nor is it intended to. Its advocates advance no such claim. But as a substitute in selective cases, it is sure to occupy a prominent position in our modern armamentarium. Those interested in female complaints will hardly evince a hasty desire to discard vaginal douching entirely in preference to rectal, having become too firmly convinced of its equal value when properly administered as taught by Sims and Emmet. And there is no sound reason why they should. The ideas herein advanced are not to be conceived as an attempt to advocate the superiority of rectal over vaginal irrigation, but to demonstrate that in certain types of ailments the former does surpass the latter. On such premises is this article based.

The writer's attention was first directed to this novel technic while interne on Dr Hanks' service in the Woman's Hospital. At that time it was customary for nearly all his ward patients to receive rectal irrigation, especially those evidencing retroversions, pelvic exudates, tubal and ovarian lesions in all stages, and also constipation. On questioning both patients and nurses as to the immediate effects observed, positive opinions were received as to its superior action. Since then, on every possible occasion, rectal irrigation is prescribed, not because I am a faddist, but an extended personal experience convinces me of its reliability and allows me to unhesitatingly subscribe to its value. On two occasions only has it failed to give actual results.

It is interesting here to note in what manner rectal irrigation effects its particular action. When we recall how clearly defined the uterus and its appendages appear during a bimanual rectal examination, and how intimately the genital and rectal circulations anastomose, a clearer conception is gained of the more constricting effect of a prolonged rectal over vaginal irrigation. By the ballooning of the entire rectum with the hot fluid, a larger vascular area is directly presented to the heated medium, and its ultimate effect on the vessels is greatly increased. In vaginal douching, the introduction of the tube is necessarily limited by the vaginal vault, which allows the fluid to come into contact only with the

*Read before the Woman's Hospital Society, N. Y., May 16, 1899.

vaginal walls and the portio, and affording no such excellent opportunity to be brought into almost immediate proximity to adnexa and the whole posterior surface of the corpus uteri, as in rectal. This statement will readily be acknowledged by all familiar with pelvic anatomy. Clearly, then, rectal irrigation permits these viscera and their abundant vascular supply indirectly to be more fully bathed by the hot water than in vaginal. In addition, by its retroactive effect on the intestines themselves there is promoted through the sympathetic system, a stimulation of the unstriated muscular fibers in their walls, which not only increases peristaltic action, but seems to act reflexly even on the cardiac muscle, as noted in the use of this form of irrigation in counteracting shock. This fact is noticeably apparent by a comparison of the quality and tension of the pulse before and after irrigation. Part of this cardiac stimulation may be due to absorption of the saline and its filling of the vessels. The heart thus receives more fluid, and necessarily its action must be spurred on in its endeavors to compensate for this increased fluid. The employment of rectal irrigation is not the administration of an enema, and in private practice it is policy to make this point clear to the patient at the outset.

As regards technique, a few minor but important details are essential. The tubes are made of rubber, aluminum or glass. The latter is advisable, as its cleanliness can always be positively demonstrated. It is preferable to use the largest sized tube, and, prior to using, thoroughly anneal to diminish its brittleness. Insert into the rectum as an ordinary rectal tube, using no unnecessary force. Sphincteric spasm is best overcome by absence of haste and a slight effort on the patient's part to bear down as in defæcation. Either Sim's or the dorsal decubitus may be elected. At least two gallons, preferably six to eight, 110°-115° F., give best results. Negative effects arise from the use of too small a quantity of water and not of a sufficiently high temperature. A gentle backwards and forwards motion of the tube, accompanied by a slight rotary action, is necessary to dislodge any particle of faecal matter which may obstruct the lumen, and also to prevent any drawing of the rectal mucosa into the fenestra, as the suction in the reflux tube from siphonage action is considerable. From neglect of moving the tube as described, portions of the mucous membrane may be forcibly detached on withdrawing the instrument. Care only is necessary to obviate any such tissue destruction. One expert in the use of rectal irrigation can employ it without even soiling the bed's or the patient's linen, but at first trial it is advisable to spread a rubber sheet under the hips or use the dorsal position with patient on a douche pan. The vesical tenesmus, which at times supervenes, seems best relieved by suppositories of iodoform, conium, and belladonna, which also tend to quiet any rectal irritation which may persist.

As to the cases in which rectal irrigation is applicable, considerable limitation is allowable. One who makes a specialty of employing this form of hydrotherapy soon finds himself supplementing his prescribed treatment of all pelvic affections with rectal irrigation in addition to

other palliative measures. Experience and judgment are the criterion, when to use or not. It is not my intention to relate successive cases in detail, with appended statistics, but rather to select a few of the different types of gynæcological cases where rectal irrigation has proved serviceable, and also those in which it furnishes the most instructive results.

In virgins with rigid hymen or small introitus, who present one of those typical histories of leucorrhœa following a prior, and, perhaps, obscure, attack of localized peritonitis (due either to a previous examthematous attack, bathing or other exposure during menses, with succeeding temporary suppression), when the effect of a vaginal douche is required, rectal irrigation is *par excellence* the ideal method of depleting the pelvic circulation. Especially is this true in the leucorrhœas of retroversions or other displacements, and in ovarian congestions. There is, after all, a natural hesitancy in demanding that young girls should be forced to employ a vaginal douche, especially if prolonged, which it needs must be to produce its effect. Rectal irrigation not only acts as an efficient substitute, but it obviates any relaxation of hymen, and also precludes the enervating effect of a prolonged hot douche in a young unmarried female. Instances are not rare in which these prolonged douches have not only induced nausea, but even syncope. Gynæcologists are not yet agreed as to the advisability of prescribing prolonged douches in every instance, especially if there is not abundant leucorrhœa. A large quantity of water is necessary to produce the desired vascular constriction, and a small quantity will not exert such a benefit. It is also a well-known fact that prolonged douching lessens the normal vaginal acidity, which is Nature's barrier to the entrance of pathogenic organisms, with the possible exception of the gonococcus of Neisser and the bacillus tuberculosis. To this end have lactic-acid douches been recently advocated by Ilkewitsch and Dalché. Advocates of rectal irrigation can advance a step further, avoiding vaginal douches entirely in young unmarried girls, and yet accomplishing the same ultimate effect.

I do not deery vaginal douching, for there are times when it is imperatively needed, for cleansing if nothing else, but in the class of cases just mentioned, rectal certainly equals vaginal irrigation, and the girl is not subject to a prolonged douche. There is too much indiscriminate douching in young girls, and many physicians have slight consideration in ordering six to eight quarts of hot water to counteract the leucorrhœa of some pelvic ailment. Such conclusions advanced before the Woman's Hospital Society may appear heretical, but clinical and personal experience proves the right to formulate these seemingly arbitrary opinions. It is my firm belief that the limitation of vaginal douching is not quite fully mastered by all, or, if so, that, carelessly, physicians do not discriminate between its restriction and necessary use.

Some of the most striking examples of the efficacy of rectal irrigation occurred during my internship in the Woman's Hospital. The following case is narrated in detail as it was one of many under observation :

Mrs. C., æt. 40; vaginal hysterectomy, with considerable hæmorrhage and shock succeeding operation, followed two days later with complete intestinal paralysis and evidencel of sepsis. Extreme tympanites, pulse

160, weak and wiry, temperature 104.2°, and patient rapidly becoming moribund. Repeated enemata and free use of cathartics of no avail. Prognosis grave and recovery regarded doubtful. To my knowledge rectal irrigation had never been employed previously in any such case in this hospital. Six gallons given, 115° F. The intestines, which before had refused to react to any stimulation and expel their contents and gas, now feebly responded after the second gallon, and strongly during the remainder of the irrigation. Large quantities of gas were voided, the patient became less restless, and the temperature and pulse fell perceptibly in a short period of time. Her condition was almost immediately improved, and she made an uneventful recovery. The irrigation was continued at intervals for the following few days. It was the general consensus of opinion that there had been a localized septic peritonitis, sufficient to induce intestinal paralysis. Certainly the outcome was nothing short of remarkable, and occasioned at the time some considerable interest among the staff. Within a few days there was again furnished another opportunity to demonstrate the absolute and relative value of rectal irrigation in a case of vaginal section for double pyosalpinx. Mrs. M., æt. thirty-three, panhysterectomy. Severe hæmorrhage during the operation compelled the use of a large number of clamps, which were undoubtedly the origin of the infection which later supervened. The patient's condition was almost identical with that of the first. After removal of the clamps in thirty hours, rectal irrigation proved successful in warding off the development of an undoubted fulminating septic peritonitis, so suddenly did the symptoms present themselves after operation.

From that time, rectal irrigation became a universal panacea in the hospital, and was resorted to on every possible opportunity by the internes. It is not to be inferred that every case of intestinal paralysis of septic peritonitis will recover, though the cases reported are not the only instances in which a fatal ending has been avoided. Rectal irrigation can, however, recommend itself, even as a *dernier ressort*.

Its value is again forcibly demonstrated in shock following operation, using normal saline as the agent. I speak now of shock accompanying severe major operations, with no evidence of hæmorrhage. Hanks strongly advises this, and reports excellent results. Even in secondary hæmorrhage, after the bleeding-point has been secured, its efficacy cannot be denied. Under such conditions and cognizant of the absorptive power of the rectum so far as saline is concerned, we note in addition to increase of bodily fluids, a secondary stimulating effect on the heart as previously mentioned. However, intra-cellular or intra-venous infusions are more popular in emergencies.

Every gynæcologist has had the irritating experience of post-operative patients complaining of pelvic distress, dull and aching in character or annoyed by the slight tympanites which occasions the convalescent so much discomfort. I confidently assert that the use of rectal irrigation in such conditions will produce in the patient a fuller sense of relief and more permanent in action than any known drug or form of enema. This

can be well illustrated in a recent abdominal section in which this pelvic distress yielded quickly to the use of the Kemp tube. The annoying sequelæ obtaining during the first few days disappear readily under this form of irrigation. An interesting private case of intestinal colic is recalled, supposedly due to the presence of adhesions, with unremitting nausea, pain, and restlessness. All the much-lauded specifics absolutely failed, and enemata resulted negatively. Rectal irrigation afforded most marked relief, controlling the nausea and decreasing the pain as to occasion patient little suffering. Its action on the adhesions, if any, is, to me, unexplained.

The prevalence of chronic constipation in the majority of women afflicted with their peculiar diseases, is so common as to call for more than routine methods. Perseverance only causes an amelioration of such a condition and oftentimes the physician is unable to trace the ætiological factor of this obstinate symptom. Rectal specialists, especially Mathews of Louisville, have devoted entire chapters in their writings to the careful consideration of this ailment. The latest addition to our present array of remedies seems to be rectal irrigation, through the complete stimulation of the entire lower alimentary tract, and the subsequent addition of tone to its mucosa. Surely the theory is tenable and justified by the apparent improvement of many of the Woman's Hospital patients. It has been impossible to record their subsequent condition—whether betterment or failure. My own experience, in private, includes one case, a distinct failure. This patient after an abdominal hysterectomy, developed constipation to such degree as to cause her considerable mental worry, as she inferred that some untoward systemic effect would follow from absorption. Careful questioning elicited a negative constitutional history, absence of hemorrhoids, good levator and posterior vaginal wall, and no evidence of venous stasis. The free use of hot water and phosphate of soda, 5i every morning were advised, but she was still compelled to use purgatives. On advocating rectal irrigation, she conscientiously employed it nearly two months, about three quarts of saline every night. The constipation disappeared in the interim, but returned on discarding the irrigation. Her condition at present is as formerly.

One other failure is to be noted, a case in which I entertained the highest hopes. Mrs. R., æt. eighteen; acute gonorrhœal pyosalpinx. It was my good fortune to be able to observe acute gonorrhœa from inception to present culmination, through the vaginitis, acute septic endometritis, double pyosalpinx, and punctuated at short intervals with three successive attacks of localized peritonitis, all within the space of seventeen days. During the peritonitis, ice bags and rectal irrigation were ordered. The irrigation produced absolutely no results, and was extremely ill-tolerated, the patient complaining of severe pain during its administration, vesical tenemus, and a constant desire to evacuate the bowels at intervals afterwards, with futile results. Her appeals forced me to abandon a method which, reasoning *a priori*, promised benefit. Its failure was a distinct surprise. The deduction may be assumed that rectal irrigation is not the ideal remedy in acute suppurative processes.

but rather is its field in acute and chronic catarrhal inflammations and congestions, which it relieves through depletion of the intimate vascular anastomosis with the rectal vessels.

To epitomize. Rectal irrigation has been found to have a distinct value in

1. Leucorrhœas.
2. As a substitute for vaginal douching in young girls.
3. Acute and chronic ovarian and tubal lesions, with the possible exception of pyosalpinx.
4. Intestinal paralysis following sepsis.
5. After major pelvic operations to relieve any abdominal discomfort or tympanites.
6. Intestinal colic.
7. Doubtful in constipation.

There is a distinct trend towards individualizing one's own particular line of treatment, and essaying to maintain an independent position. Established ideas are rarely rejected in preference to innovations, unless the latter are qualified to merit careful attention. Of these, rectal irrigation commends itself to gynæcologists for thoughtful and unprejudiced consideration, as having seldom failed to meet the test on fair trial.—*The American Gynecological and Obstetrical Journal.*

OBSERVATIONS ON THE ORIGIN OF GALL-BLADDER INFECTIONS, AND UPON THE EXPERIMENTAL FORMATION OF GALL-STONES.*

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Dr. Hunners' report adds one more to the list of cases in which post-typhoidal gall-stone formation and the persistence of Eberth's bacillus in the gall-bladder have combined to set up a suppurative cholecystitis, demanding operative intervention.

There seems to be little doubt at present but that the original source of infection in these cases is a hematogenous one, the bacilli first entering the portal circulation through the atrium afforded by the intestinal lesions. As Fütterer has shown experimentally, organisms so introduced are probably for the most part rapidly eliminated by the liver and thus enter the biliary passages, though many may pass into the general circulation, thus producing a temporary peripheral septicæmia. The frequency of such a typhoidal septicæmia has been demonstrated at this hospital by Dr. Gwyn, who has succeeded in cultivating typhoid bacilli from the blood of eight out of thirty patients examined for this purpose in Dr. Osler's clinic and the occurrence in a variety of situations of peripheral suppurative lesions for which the specific organism of the disease is responsible is thus readily explained.

The belief is quite universal, however, that the biliary infection comes about by ascension and that the organisms enter from the intestine into the common duct. Thus Gilbert, in 1894, held that *B. coli* played the most important rôle in cholecystitis because it was found by him in the duodenum in numbers exceeding all other species and because it was possessed of motile properties which enabled it to enter the common duct. More recently Richardson is quoted by Keen as also expressing a belief in the ascending or intestinal source of infection of the biliary apparatus. He found on one occasion at autopsy "pure cultures of the typhoid bacillus in the gall-bladder, duodenum and jejunum, and it was only when the ileum was reached that colon bacilli began to appear at all." Were the infection an ascending one, I am inclined to believe that other intestinal bacteria from the ileum would have been found associated with the bacillus typhosus in this case.

Recent investigations (unpublished) upon the flora of this part of the intestinal tract have demonstrated, in agreement with the observations of Gilbert and Dominici, that the duodenum, especially of rabbits, is very free from micro-organisms. On one occasion a cubic centimeter of a 24-hour bouillon culture of *B. typhosus* was injected into the ear vein of a

*Remarks before the Johns Hopkins Medical Society to accompany Dr. Hunner's report of a Case of Typhoidal Cholecystitis.

rabbit. Two days later from the gall-bladder and duodenum pure cultures of the organism were recovered—a result similar to Richardson's but resultant of course to a hæmatogenous infection. I was not, however, always so fortunate in recovering the organisms. In *Rabbit IX*, which case I will mention later, two days after a similar inoculation into the ear vein, the organisms were not recovered from the bile and in all probability they had been entirely eliminated. I have seen a similar rapid disappearance on direct inoculation into the gall-bladder in dogs. In one animal the bile was sterile twenty-four hours after the inoculation.

Bile itself, contrary to the widespread belief in its antiseptic properties, is a favorable culture medium for most organisms and it is surprising that normal bile should ordinarily be sterile, as Gilbert has demonstrated, when we consider that micro-organisms are in all probability frequently being passed out with it through the liver.

Leubuscher believes that the sterility rests on an unhindered overflow, some degree of obstruction being requisite for the persistence of micro-organisms.

Létienne showed that bacteria are more likely to be present, when there is no disease of the gall-bladder itself, in association with abnormal conditions of the body. In forty-two cases examined he found *Staphylococcus albus* 13 times, *B. coli communis* 13 times, non-liquefying *Staphylococcus* 3 times, *Staph. pyogenes citreus, aureus, etc.*, 1 each, *B. typhosus, Pneumococcus, etc.*, 1 each. On seven occasions the bile was mono-microbial, on 17 poly-microbial, and on 18 sterile. These observations merely show what a highway for micro-organisms the biliary passages are. The observation of Netter is in accordance with Leubuscher's view that ligation of the common duct in animals is followed by an acute inflammation of the biliary passages. Here also the infection is with less likelihood due to an ascending process than to an inflammation induced by micro-organisms, possibly of intestinal origin, which, eliminated by the liver from the portal system, enter the bile duct from above. Such an infection, however, does not necessarily follow a pathological occlusion of the common duct. Dr Halsted recently removed a primary carcinoma of the duodenal papilla which had caused complete obstruction. Cultures from the common duct were negative as well as those from the gall-bladder, which was greatly distended by a pale mucoid fluid containing a deposit of fine biliary sand.

The typhoidal lesions, however, offer a portal of entry not alone for the typhoid bacillus but also for all other bacterial inhabitants of the intestine. The *Bacillus coli communis* for example, which organism, recent observers, as Dreyfuss, Sanarelli, de Klecki and others, have shown to acquire increased virulence in the presence of the inflammatory products of typhoid and other enteritides may similarly enter the portal circulation. This, Dr Welsh demonstrated some years ago to be the case. The colon bacillus, however, apparently rarely passes beyond the liver into the general circulation, its ravages being limited to the confines of the portal system. It consequently may be as frequent a factor and indeed is actually a more frequent agent in the production of post-

typhoidal gall-bladder complications than the specific cause of the disease itself. This has recently been emphasized in a paper read before this society.

As was shown in one of the cases reported at that time, there was an active serum reaction toward both *B. typhosus* and the colon bacillus isolated from the gall-bladder. This increased virulence of *B. coli* in many cases of typhoid, being the cause of unusual agglutinative properties of the host's serum toward this organism,* may account for the occasional clumping of *B. Coli* in the bile when it has once entered the gall-bladder in correspondence with the reaction toward the bacillus typhosus which seems to be the rule there at some period of the fever.

Salimbini regarded the agglutinating property as one only acquired by the blood-serum after being shed, and expressed a disbelief in its occurrence in the living body. Durham, however, disagrees with this on the ground that numerous observations on peritoneal injections in immunized animals have always shown that agglutination occurs within the peritoneal cavity. Since it has been proven that the bile of typhoid patients acquires agglutinative properties, this reaction *in vivo* in the gall-bladder naturally would occur in a fashion similar to that produced experimentally in the peritoneum. Richardson has examined at autopsy the bile of fatal cases with this in view and found large clumps of bacilli in every case but one (five out of six). It is important to note that the blood-serum of this one case had failed to show an agglutinative reaction during life.

What relation the organisms have toward the disposition of bilirubin calcium and stone-formation has not been conclusively proven. The views of Naunyn are generally accepted, though some of his chemical theories, chiefly that relating to the local production of cholesterol, have been questioned by Chittenden.

The organisms may be present in the gall-bladder just as in the urinary bladder during the course of typhoid fever without producing any evidence of cystitis whatever or exhibiting any tendency to become attenuated or to agglutinate, though the patient's serum may give a decided reaction outside of the body.

Just what influence tends to agglutinate the organisms *in vivo* and whether the "clumps" formed really act primarily as the nidus for stone-formation has not been actually demonstrated.

The mere clumping of the organisms in the bile has *in vitro* no macroscopical effect whatever on the bile. I have inoculated bile, aseptically withdrawn from the gall-bladder of animals, with the bacillus typhosus,

*The fact that human serum in health often possesses agglutinative properties toward varieties of *B. Coli* probably is only an evidence of an acquired characteristic following an unrecognized invasion of the organism during the course of some preceding enteritis. Such an occurrence has probably been a secret forerunner of most cases of biliary lithiasis; the organisms, being eliminated by the liver, enter the gall-bladder and under certain favoring circumstances produce lithiasis, which after the infectious agents has died out may give no subsequent symptoms. It is not improbable that a chronic enteritis such as may be associated with alcoholism may constantly feed the liver with intestinal bacteria, chiefly *B. coli communis*, and thus ultimately be responsible for the cirrhotic changes which takes place there. The demonstration that the organisms found by Adami in cirrhotic livers are colon bacilli would favor this view.

and subsequently precipitated the bacilli by adding serum from a typhoid patient without producing any appreciable effect on the medium whatsoever.

The mere presence of the micro-organisms in the bile, however, may alone not be sufficient to incite the catarrhal process, the "lithogenous catarrh" of Naunyn, which is generally conceded to be an essential element in the process. I have never been able to produce any such catarrhal process in dogs or rabbits by simple intravenous injection of the bacillus typhosus or by injection of the organisms directly into the gall-bladder, though the animals have been examined at periods from a few days to several months.

Organisms may be recovered from the gall-bladder long after the original injection, and they frequently are found "clumped," as Blachstein and Welsh observed some years ago. The organisms may so remain for an indefinite period without producing any apparent inflammation of the mucosa. To induce this requisite catarrhal process, some other element, presumably some form of irritation such as traumatism or some hindrance to the proper evacuation of the gall-bladder is necessary.

I am able to show to the society some small biliary calculi of typhoidal origin obtained from the gall-bladders of rabbits, in both cases at the time of inoculation the biliary apparatus having been intentionally maltreated.

On one occasion the organisms (non-attenuated) were inoculated directly into the gall-bladder, which had to be held tightly for some time by a piece of gauze between the fingers to prevent leakage after the syringe was withdrawn. At the autopsy, eight weeks later, three small millet-seed concretions were found adherent to the mucosa of an inflamed thickened and distended gall-bladder.

The second case (Rabbit IX of our series) is as follows:

March 17, 1898. Inoculation of 1 cc. of 24-hour bouillion culture of *Bac. typhosus* into ear vein.

March 19. Laparotomy. No evidence of inflammation. Cultures and cover-slips from gall-bladder and duodenum were negative for micro-organisms. Considerable traumatism of gall-bladder.

March 21. Second inoculation of 1 cc. of 18-hour culture of *Bac. typhosus* into ear vein. Animal quite ill subsequently, but recovered.

June 13. Widal reaction positive. Laparotomy. Marked evidence of cholecystitis. Gall-bladder bound up by adhesions in lappets of liver and identified with difficulty. One cc. of pale bile, aspirated from gall-bladder. Stained preparations showed a few rod-shaped organisms. Culture—*Bac. typhosus*.

June 14. Animal found dead. Autopsy. Peritonitis. Serosa greatly bile-stained. Gall-bladder thickened, congested and densely adherent to liver. Contents: Small amount of pale mucoid material, and three gall-stones. The largest is dark-colored, somewhat irregular in shape, measuring 3 mm. in its longest diameter.

Decomposition had set in and bacterial observations were not made.

Possibly such a concretion may be regarded merely as a precipitation and not a true crystallization though it possesses the characteristics of a young biliary calculus having a marked cholesterin covering. The stone depicted by Richardson and the early calculi described by Gilbert and Fournier were evidently of this character. The concretions were regarded as stones in the primary stages of development. Their chief constituents are bile pigments combined with calcium. These bilirubin calcium concretions are less commonly found in the human gall-bladder where stones

ordinarily contain a large predominance of cholesterin. Chittenden says that bovine gall-stones possess this same characteristic and are often pure-pigment calculi, sometimes wholly without cholesterin.

Although Galippe, as early as 1886, advanced the theory of a microbic origin of lithiasis in general, the chief credit of the demonstration of the infectious nature of cholelithiasis belongs to Gilbert. The results of his observations, begun in 1890, were utilized by Naunyn at the Wiesbaden Congress in 1891, when he advanced his hypothesis on biliary infections. Since that time Gilbert, and his collaborators, Girode, Dominici, Claude and Fournier, have continued to publish the progress of their interesting and valuable investigations on the relation of infectious processes to diseases of biliary apparatus.

Experimental attempts to produce calculi of infectious origin were for a long time unavailing. In 1893 they first noted the presence of "*petites concrétions verdâtres*" which had formed during a typhoidal cholecystitis in a rabbit. Following this discovery, methodical attempts were made for a number of years to obtain more perfect and undoubted concretions. On January 29, 1897, these efforts were rewarded by the formation of a definite stone obtained from the gall-bladder of a dog previously inoculated with the *Bacillus coli communis*.

Gilbert and Fournier, however, failed to announce their results until after Mignot, who had entered the same field of work, had presented to the Société de Chirurgie, on the 19th of May, 1897, three small experimental calculi formed in a guinea-pig by *Bacillus coli*. It was generally believed that the bacillus of Escherich played the most important part in these infections. Interest in typhoidal cholecystitis, however, led Gilbert to experiment with Eberth's bacillus and on October 30, 1897, he with Fournier, profiting by Mignot's idea of attenuation, reported the production of biliary calculi in a rabbit resultant to an infection with *B. Typhosus*.

These calculi were regarded as stones in the primary stage of their development and from the description they must have resembled closely those produced by Richardson and those shown to this society. The gall-stones, however, which Mignot succeeded in producing experimentally were said by Hartmann and acknowledged by Gilbert to have been identical in appearance with those commonly seen in human gall-bladders. These calculi were presumably five or six months old.

Various experimenters have adopted different methods in their attempts to produce infectious cholelithiasis. Endeavors to modify the composition of the bile and to alter the mucosa of the gall-bladder and to produce in divers ways a biliary stasis have equally been unrewarded.

The mere introduction of virulent micro-organisms alone as well as the introduction of aseptic foreign bodies without micro-organisms have similarly been unsuccessful. Mignot claimed that one of the two conditions essential to the formation of calculi was the extreme attenuation in virulence of the microbe employed, and regarded the degree of virulence of the organism as more important than the species. Adopting this principle, Gilbert and Fournier, by inoculating cultures of colon or typhoid, previously attenuated by heat, directly into the gall-bladder, were rewarded by finding some months later definite calculi, from the centres of which they recovered the original organisms.

This preliminary attenuation of the infective agent which Mignot has found essential to the process may possibly, under certain conditions, take place in the body and be analogous to the agglutination of the organisms which takes place in the gall-bladder; the clumps, according to Richardson's hypothesis, forming the primary nidus of deposition for the biliary salts and pigments. In his attempt to form stones on this principle he inoculated an agglutinated culture of *Bacillus typhosus* directly into the gall-bladder of a rabbit and was successful on one occasion in producing a fair calculus.

Mignot, however, claims that to produce true stratified calculi five or six months are requisite, and that a second condition, as important as the attenuation of the micro-organisms, is necessary, namely the prevention of the premature expulsion of the soft concretions. This he accomplished in various ways. In his most recent article two especially characteristic cases are described.

In one of them the gall-bladder was tamponed in the presence of colon bacilli for one month. At the end of that time the tampon was removed and the gall-bladder closed. Fourteen months later, $\frac{7}{8}$ faceted stones were found occupying the gall-bladder which presented the anatomical picture characteristic of old gall-stone cases.

In another case two gall-stones were made to form about a thread which was fastened into the wall of a gall-bladder previously inoculated with attenuated colon bacilli. Dr. John Homans has reported a clinical experience similar to this experimental one in which at a second operation for cholelithiasis, gall-stones were found to have formed about the threads used at the primary operation in suturing the gall-bladder to the abdominal wall. There is no accompanying bacteriological note, unfortunately. These were large cholesterin stones such as Mignot has succeeded in producing and were found twenty months after the primary operation.

Mignot believes that the process of stone-formation and increment in the size of stones ceases with the death of the micro-organisms. Stones found in the gall-bladder are presumably on most occasions all of the same age, and always possess the same appearance, chemical composition and bacteriological characteristics. The original condition favorable to their formation, therefore, seems to be a transitory one. Old calculi are usually sterile, though their nuclei may contain the faintly-staining shadow of bacilli. Recently formed stones contain micro-organisms. Mignot further believes that if stones in process of development are removed the chances are in favor of a new formation. This is an argument against the so-called "ideal" operation and justifies the clinical experience of most surgeons that it is preferable to drain the gall-bladder in recent cases till one is practically sure of the aseptic condition of the bile and convinced that the ducts are sufficiently patent to allow of the free escape of the contents of the gall-bladder. It is surprising that one does not more often encounter secondary formations of gall-stones after preliminary operations, when we consider that the combination of traumatism and necessarily-retained micro-organism is present, a combination most favorable for the experimental production of stones.—*Johns Hopkins Bulletin*.

THE BACILLUS DIPHTHERIAE IN MILK.

BY J. W. H. EYRE, M.D., D.P.H.,

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History of Prevalence.

In local epidemics of diphtheria the *prima facie* evidence has frequently implicated the milk supply as the vehicle engaged in the dissemination of the disease, but as in the case of waterborne enterica, the difficulties attending the investigation are so great, and the action of the original contamination usually so transitory, that the specific organism of the disease has but rarely been isolated from the fluid medium conveying it. In fact, with the exception of that recorded by Bowhill in the *Veterinary Record*, I am not aware of any sufficiently authenticated instance; and although I have several times been called upon to examine samples of milk suspected of containing the Klebs-Loeffler bacillus, it was not until February of this year that the investigation of such a sample yielded a positive result.

During the latter months of 1898 and the beginning of 1899, a number of cases of diphtheria had occurred among the inmates of a large school, and in the course of an inquiry as to the channel by which the disease had gained access to the school, I received a sample of the milk supply for bacteriological examination.

As far as I can gather, the method of collecting the sample was as follows. The cans containing the day's supply were brought to the school at about 11 a.m. on Sunday, February 2nd, 1899, and were unloaded from the cart and deposited in the kitchen of the institution. Here the sample of milk was removed from the can by means of a small jug, previously sterilised by boiling for ten minutes, and filled into two sterile half-litre bottles. (The sterile bottles were obtained from the bacteriological laboratory of Guy's Hospital.) The bottles were securely stoppered, and sealed down, and at once conveyed to me, reaching the laboratory at 12.30 p.m., when the examination was immediately commenced.

Analysis.

After agitating each bottle in order to ensure a thorough and even admixture of its contents, and well flaming the projecting portion of the stopper, and then the neck, 50 c.cm. of the milk were withdrawn by means of a sterile pipette, added together in a sterile flask, and labelled "Mixed milk."

Plates poured from this mixture gave an approximate enumeration of 10,960 organisms per cubic centimetre, and included such organisms as *staphylococcus aureus*, *staphylococcus albus*, *sarcina lutea*, *bacillus mesentericus vulgatus*, *B. fluorescens liquefaciens*, *torula alba*, etc.

The "mixed milk" was now filled into twelve small sterile tubes, labelled A to K, and centrifugalised for about ten minutes, the machine, one of the Dairy Company's centrifugalisers, running at some 2,000 revolutions per minute. On removing the tubes from the centrifugaliser the milk in each was seen to have separated into three distinct layers. The uppermost, consisting of the cream, formed practically one-quarter of the column of fluid; below this came the separated milk; whilst the rounded portion of the lower extremity of the tube was filled with the sedimented deposit.

Microscopical Examination.

I. The Tube A was used for microscopical examination :

CREAM.—Coverslip film preparations made from the cream (which formed a firm mass, of about the consistency of butter, and necessitated the use of a very stout platinum spatula to remove it), and stained with a view to the demonstration of bacteria, showed a fair number of micro-organisms—both bacilli and cocci—also a very few leucocytes. No bacilli were observed which would resist discolorising with 25 per cent. solution of sulphuric acid.

SEPARATED MILK.—No micro-organisms could be detected in this fluid.

CENTRIFUGALISED DEPOSIT.—As in the cream, both bacilli and cocci were noted in the films prepared from the deposit, but in much fewer numbers. Leucocytes were present in numbers decidedly in excess over those found in the deposit from healthy "one-cow" milk similarly treated, also some epithelial cells and granular *debris*.

Cultivation.

II. Portions of the cream from five of the tubes, lettered B to F were used to inoculate tubes of inspissated blood serum in the following manner.

Tube B.—A stout platinum loop, after sterilising in the Bunsen flame, was thrust into the semisolid mass of cream, withdrawn, and the material retained in the loop planted on surface of a blood serum tube (1).

From Tube C.—A similar quantity of cream was used to inoculate "consecutively" the surface of two serum tubes (2 and 3). (By "consecutively" is meant the inoculation of tubes of media in series, that is, without sterilising the loop or adding more material between its withdrawal from the first tube and its introduction into the next.")

From Tube D.—A loopful of cream was used to inoculate consecutively three serum tubes (4, 5, 6).

From Tube E.—One loopful of cream was used to inoculate four serum tubes consecutively (7, 8, 9, 10).

From Tube F.—One loopful of cream was used to inoculate five serum tubes consecutively (11, 12, 13, 14, 15).

III.—The centrifuged deposit from tubes lettered G to K was used to plant fifteen more blood-serum tubes, and in order to minimise the risk of diluting the deposit and to render it more easily get-at-able, the greater part of the cream was removed from each tube in the form of a cylinder, by means of a small sterilised cork-borer. Through the orifice thus made a sterilised pipette was introduced and the separated milk pipetted off. After the removal of the pipette the platinum loop was easily passed into the tube, and a portion of the deposit taken up.

From Tube G.—One loopful of the sediment thus obtained was used to inoculate consecutively five blood-serum tubes (16, 17, 18, 19, 20).

From Tube H.—One loopful of the sediment thus obtained was used to inoculate consecutively four blood-serum tubes (21, 22, 23, 24).

From Tube I.—One loopful of the sediment thus obtained was used to inoculate consecutively three blood-serum tubes (25, 26, 27).

From Tube J.—One loopful of the sediment thus obtained was used to inoculate consecutively two blood-serum tubes (28, 29).

From Tube K.—One loopful of the sediment thus obtained was used to inoculate one blood-serum tube (30).

The entire batch of thirty tubes were then placed in the incubator regulated at 37-5°C., and examined at the end of twenty hours, when a growth was found to have occurred in every one of the tubes.

NAKED EYE EXAMINATION.—The growth in each of the tubes consisted of minute colonies much too closely aggregated to allow of the characteristic development of any one of them, and in all the tubes with the exception of 15 (which appeared to contain a pure culture) a very mixed growth was present, including several chromogenic organisms.

MICROSCOPICAL EXAMINATION.—As it appeared well-nigh hopeless to search for individual colonies resembling the *B. diphtheriæ*, coverslip film preparations were made from a surface scraping of the growth in each of the thirty tubes, care, however, being taken to avoid touching with the spatula any such colonies or masses of colonies as were obviously not composed of the *B. diphtheriæ*. All the films were stained with well-matured carbolic methylene blue, and carefully examined with a $\frac{1}{2}$ inch oil-immersion lens. This microscopical examination resulted in the discovery that bacilli morphologically resembling the *B. diphtheriæ* were present in no fewer than fourteen of the tubes (namely, Nos. 1, 2, 4, 6, 10, 12, 13, 14, 15, 16, 21, 22, 24 and 30). The bacilli represented two well-defined types, the one the typical segmented and clubbed form known as the Klebs-Loeffler bacillus, the other the type described by Peters as the "short pathogenic," but which is more happily termed the "sheath" bacillus.

The two varieties were present in practically equal proportions, the segmented form predominating in eight of the tubes, whilst in the remaining six the sheath variety was the prevailing type.

Now, on comparing the numbers of the tubes containing these suspicious bacilli with the list of preliminary inoculations given above it will be

seen that whilst every loopful of the centrifugalised "cream" contained these (?) diphtheria bacilli, only three out of the five loopfuls of the centrifugalised deposit appeared to do so; and this result one expected from the ratio existing between the number of organisms present in the coverslip films made directly from the centrifugalised "cream" and "deposit" respectively.

Isolation.

The next step was to isolate one of each of the two types present in the milk, to study their morphology and biology and to compare them with a known pathogenic *B. diphtheriæ*, obtained from a diphtherial throat, as a control.

The sheath variety was easily isolated from Tube 15, which was almost a pure culture to start with. This was labelled " $\Delta 15$." The segmented variety (from Tube 30) gave considerably more trouble and required "consecutive" planting upon twelve blood serum tubes before it could be obtained in state of purity. This bacillus was labelled " $\Delta 30$."

Staining Reaction.

Both types stained equally well with the aniline dyes and also by Gram's method. The distinction between the segmented form " $\Delta 30$ " and the sheath variety " $\Delta 15$ " was extremely well marked in 18 to 20-hour blood serum cultivations when carbolic methylene blue was the stain used, but upon staining coverslip preparations by the method suggested by Neisser—the so-called diagnostic stain—the two were indistinguishable, each showing two dark polar granules and in a few isolated cases a third central one. Every trace of the sheath with its tapering extremities disappeared under these conditions from " $\Delta 15$ " and it now presented the appearance of a regular rod of the same size, shape, and coloring as the control *B. diphtheriæ*.

Cultural Characters.

Both " $\Delta 15$ " and " $\Delta 30$," after isolation from the milk, were planted upon various media, and carefully compared with cultivations, made under identical conditions, of the control *B. diphtheriæ*. The media used in each case were: bouillon, glucose bouillon, agar, glycerine agar, inspissated blood serum, gelatine, litmus milk, litmus whey, and potato. Without describing in detail the various cultural appearances, which to the naked eye were those typical of the *B. diphtheriæ*, it will suffice to say that they were identical in all three sets of cultures, and the acid production at the end of 36 and 48 hours was equal.

Pathogenesis.

Each of the two varieties was fully tested by inoculation experiments, and the following extracts from my note-book yield conclusive evidence not only on the point of pathogenicity, but also as to identity, with the *B. diphtheriæ*.

GUINEA-PIG 3.—Weight, 220 grams. Received 2 milligrammes of a 48-hour blood serum culture of “ Δ 30” (emulsified with 0.5 c.cm. of sterile broth) under the skin of the abdomen. Result: Death in forty-eight hours.

POST-MORTEM EXAMINATION.—The subcutaneous tissues at the seat of inoculation was occupied by a spreading gelatinous exudation. The peritoneal and pleural cavities contained a large quantity of clear serous effusion. The kidneys and adrenals were hæmorrhagic. The organism was recovered in pure culture from the seat of inoculation and also from the peritoneal effusion.

GUINEA-PIG 4.—Weight, 400 grams. Received 1 c.cm. of a 48-hour glucose-broth culture of “ Δ 15” under the skin of the abdomen. Result: Death in rather less than sixty hours.

POST-MORTEM EXAMINATION.—As in Guinea-pig 3, except that the organism was recovered from the seat of inoculation only.

GUINEA-PIG 5.—Weight, 390 grams. Received a similar dose to Guinea-pig 4, and from the same culture. This was followed after a few minutes by the subcutaneous injection of 1 c.cm. of diphtheria antitoxin (B.I.P.M.) Result: Animal unaffected. Alive and well six weeks later.

Note and Reference.

Bowhill, Milk the Vehicle of Contagion in an outbreak of Diphtheria, *The Veterinary Record*, No. 561, April 8th, 1899. This latter bacillus when stained with a carbolic methylene-blue shows a distinct sheath of faintly-stained protoplasm tapering to a fine point at either extremity and enclosing one darkly-stained elongated lozenge-shaped aggregation of protoplasm about one-third of the length of the entire organism.

Discussion.

Dr. W. H. Symons (M.O.H. Bath) wished to know if Dr. Eyre traced the origin of the diphtheria bacillus in the milk to a human or a bovine source? The previous history of the milk was often sufficient to enable a medical officer of health to stop a milk supply. He would also like to know if Dr. Eyre had tried the effect of diluting the milk before centrifugalising. Bacilli had a specific gravity varying from 1035 to 1045, and floated indifferently in milk, urine, and other fluids of similar specific gravity. Dilution lessened the specific gravity of the fluid, and so allowed the organisms to be thrown to the bottom away from the fat.

Dr. Eyre, in reply to the President, said that no other organism but the diphtheria bacillus would produce in the guinea-pig the same conjunction of spreading gelatinous exudation at the seat of inoculation; peritoneal, pleural, and pericardial effusions and hæmorrhage into the suprarenals. Therefore, if by introducing a cultivation of the organism which he had isolated from the milk into the subcutaneous tissues of a small guinea-pig he obtained a result conforming to these appearances, he considered his point was proved, and his diagnosis of the bacillus diphtheriæ was fully confirmed.—*B. M. J.*

CHRISTIAN SCIENCE "DEMONSTRATIONS."

[WITH COMMENTS BY DR. J. H. R.]

FROM CHRISTIAN SCIENCE JOURNAL FOR APRIL LAST.

1. Lady—Sunday morning, starting for Sunday school, fell on the stairs—leg doubled under her—people ran into the hall declaring "I was hurt." I immediately met the claim with a strong denial, declaring, "I am not hurt." I immediately rose, staggering a *little*, so I grasped the door to steady myself. I knew if I abided or stayed firm in my denial of error I need not fear. So I put down my foot bravely and started. Was very dizzy—had to put my hand on the fence. *I walked to the hall, some distance—stood nearly all the time I was there, walked home and back again in the afternoon to our service, stood up through that, and walked home again. I did not look at my leg.* Error screamed pretty loud that night, but the pain ceased in the morning, and after that *I had no more trouble with it. . . . Several days after I felt a protuberance just below the knee, I looked, and behold, there were the two ends of the fractured bone pressing hard against the skin, as if trying to get through.* The swelling was soon gone.

Women Do Not Need Legs for Locomotion.

I realized then that *man is not dependent on a material organization for anything, not even for locomotion;* i.e., she realized that she could eat without a mouth, and walk without legs. Legs must be for *ornament—not for use.*

Bible Superseded by C. S.

2. "Three years ago I was trying to find out rest and peace. I would read *my Bible and wonder what it all meant.*" She got "Science and Health," read it every day and her troubles left her.

Moral—Throw away your Bible and read "Sc. and H."

Boy's Finger Jammed and was not Hurt.

3. A little boy had his finger jammed by the lid of a trunk—screamed—his mother took the hand in hers. "By the time we had crossed the room he had ceased crying. In ten minutes there was *only a mark like a pin scratch* across the back of the hand."

What a miraculous "demonstration"!

Boy Thrown off Velocipede and was not Hurt.

4. Same boy—fell off his velocipede, striking his head on the sidewalk—could not open his eyes for the pain. "A few minutes' reading of the 'Truth Book' put him to sleep. He awoke in half an hour, still in pain, threw up, went quietly to sleep. Woke up next morning *without a mark* on either face or head."

Of course nothing like this ever happened to a child whose parents did not believe in Ch. Sc.

Sciatica Lasted Three Months and then Disappeared.

5. A woman, attacked in *June* by sciatica, "was treated by one of Mrs. Eddy's loyal students, *through June and July*, not in August. "September came, I thought I was worse. She gave me *one treatment*, and I have been a well woman ever since."

Who ever heard of a case of sciatica lasting three months and then disappearing, except under Ch. Sc. treatment?

"Ch. Sc. Understanding" Does not Prevent Them Living in Alaska or California.

6. "I was in Alaska in Feb., 1889, and Southern California in August, and felt no bad results from extreme heat or cold; thus proving to me that one can be healthy in all climates, with the understanding of Ch. Sc."

What a consoling fact! one need not fear to live in either Alaska or California, even if he understood Ch. Sc.

26 Ailments Relieved by Ch. Sc.

7. Case of eczema—Clifton Springs for several successive seasons—treatment gave relief, but the disease was sure to return next summer. I took Ch. Sc. treatment. "I counted up *twenty-six* different troubles, ills, habits, etc., of which I had been cured. All my troubles have dropped away *but one*, and that I hope to get the better of in time."

Query. What was the one? Was it the eczema?

Dose of Ch. Sc. Makes a Cross Dog Become Good.

8. "One of the boys of our S. S. who had been desirous of a newspaper route had a chance for one, *but there was a dog* on the route which was very ferocious; three boys had been bitten by him. He thought he would try it. When he told his parents what he was going to do they asked him how he was going to meet it. He said, '*I will just give that dog a dose of Ch. Sc.*' He started on his round, the dog came bounding out, barking loudly at him. He spoke to the dog—dog came and lay down at his feet. Then he said, 'Brownie, take this paper around to the back door for me.' Brownie did so, and has done it every morning since."

Mrs. Eddy cures boils with a "*high attenuation of Truth*," was that the "dose" the boy cured the dog with?

Clothes Caught Fire—Woman was not Burnt.

9. Girl—clothes caught fire—girl rubbed her hand over them—fire was extinguished: "My brother said, 'it is a wonder you did not burn up.'"

What a miracle!

FROM CHRISTIAN SCIENCE JOURNAL FOR MAY.

10. "Being busy in the household a portion of the boiling water came over on my hand. The pain was fearful, but then I turned to my dearly beloved science, and the pain ceased. The next morning I found that *no blister had appeared.*"

Boiling Water did not Scald, However.

Then it was evident that the scald was a *very* trifling one. Of course such a thing could not have happened to any one but a Ch. Scientist.

Horse Treated by Ch. Sc.

11. Man's *horse* got sick about 5 p.m.—he had not time to go to see him untill after his chores. "When I arrived the horse was so weak that he could not raise his head up. His ears were cold and he *seemed* to have a high fever. *I treated him about one minute*: all at once the horse got up without effort and began to eat.

Query. *How* did he treat the horse? as he would a man? *i.e.*, sit down, look at the horse, relieve its *fear*, argue with it *silently*, and so get the horse's "corporeal senses to respond 'so be it'?"

SC. AND H., P. 410.

Men Turned from Evil Purposes by Ch. Sc.

12. Lady stenographer relates: "Seven men called on me to do some work for them. It soon became evident that they intended to defraud one man. Realizing that God, Good is All—there is no place for dishonesty, *I continued to work*, and presently one man stood up and said, 'it is not right, I cannot do it.' The other men *seemed* only too glad to be convinced, and soon the matter was settled honestly and fairly."

Query. Did no man's conscience ever cause him to give up evil intentions before?

"No place for dishonesty!" are not some men dishonest?

Sight of a Spoon Cures Defective Eyesight.

13. "I wish to tell of a demonstration with *the souvenir spoon*, while a lady was calling on me one evening. She had not *seen the spoon before*, and while examining it, *asked me to read the motto upon it*, as she had left her glasses at home, *and could not possibly see it without them*. I said, 'you can read it, now try.' Finally she did so, and said it was wonderful that she had been able to do so."

So the sight of one of "Mary Baker Eddy souvenir spoons" restored the lady's eyesight.

Buy, oh, buy one of these miracle working spoons—\$3 silver, \$5 gold plated. Then you will be restored to eyesight, and be able to walk, even if you have no legs.

FROM CHRISTIAN SCIENCE JOURNAL, JUNE.

14. Old woman—"healed of malignant cancer of the face—there *was not* even a disfiguring scar left." "One thing she feels quite sure of, that is, that *people oppose Ch. Sc. because a woman discovered it*."

Good for the old lady. Women seem to be at a discount in her section.

Ch. Sc. Enabled a little girl to get her lesson.

15. Little—girl—at school—lesson very difficult. "I tried to realize that nothing was too hard *for the divine mind*. In consequence I *was the only one* which had a perfect lesson."

The only deduction I can make from this is, the little girl's mind was "the divine mind."

Of course no little girl who was not a Ch. Scientist ever before learned a hard lesson perfectly.

Hen Hurt—Christian Science Heals it.

"I wish to tell of a demonstration I had with *my pet hen*. One day she got stepped on. Mamma *thought* she was dead, and told me to throw it away. But I sat down on the doorstep and treated her the best I could, and she was soon as lively as ever."

I can crow over this.

A friend of mine in the country had an old rooster which was frozen still and lay all day under the kitchen table, and he was cocksure that it was dead, and had it buried in the dunghill, which was a foul bed, I admit. The next day the old cock was strutting about in as fine feather as ever.*

Moral. Dunghill science is more efficacious than Ch. Sc. in bringing chickens to life.

Ch. Sc. Boy Thrown off Wagon and was not Hurt.

13. "I am a little boy eight years old, and want to tell you about my demonstration. I was thrown from our wagon, falling on my head and shoulders. We *denied* it, and in about *an hour* I was all right."

Of course none but Christian Science boys ever fall out of a wagon without being hurt.

CHRISTIAN SCIENCE JOURNAL, MARCH, '99.

Eczema Lasted Three Years and Then Got Well.

14. Woman—had eczema—"tried many doctors, expending hundreds of dollars and receiving no benefit." Then she tried Ch. Sc. "I procured the Quarterly, and almost all Mrs. Eddy's works, and with them *and my Bible* and journals I learned much. *This state of things continued for more than a year and then* the eczema, with many other chains, *began* to leave. I had weak eyes, rheumatism of the hip, kidney troubles, and other minor diseases. About two years before I broke my arm, and up to coming into Science I had been of little use.

*Fact (J. H. R.).

DIETING IN PREGNANCY.

BY BEDFORD FENWICK, M.D.

Physician to The Hospital for Women, Soho Square.

We may often learn a great deal from a case which is, apparently, of the most simple nature. This patient, at first sight, seems to be suffering from ruptured perineum, and nothing more. It is a bad case, certainly, because, as you see, the rupture has extended not only through the sphincter ani, but also for more than half an inch through the anterior rectal wall. The history which she gives is, also on the face of it, not uncommon as explanatory of this condition. She is 29 years of age, and has had three children. Each labour was prolonged and instrumental, and each was evidently of a somewhat serious character, seeing that each child was born dead, and "two of them were cut away in pieces." At each confinement, apparently, there was some tearing of the perineum, and this was, evidently, greatest at the last labour, four months ago. The reason for her suffering is also obvious, because there is marked contraction of the pelvic outlet, so that a considerable degree of dystocia might have been anticipated. Our duty, therefore, in this case will not end with relieving her present symptoms, the chief of which are ascribed to the rectal condition. It will not end, in this case, as in many others, with the performance of a plastic operation, so as to repair the tear through the rectal wall and thus restore the proper action of the rectum. Incidentally, I would like to impress upon you the practical fact that, in a woman of this social condition and this age, it would be useless, and, therefore, unwise, to attempt to completely restore the perineal body. The new tissue would, inevitably, be torn through again at her next confinement, next year, and the tear might then extend into the rectum again; whereas by merely repairing the rectal injury, the distressing symptoms, due to complete loss of control over the passage of fæces and flatus, would be removed, and the vaginal orifice would be sufficiently patent, on the next occasion, to obviate, perhaps, any increased laceration. Amongst the working classes, it is wiser to defer the complete operation until the child-bearing age is past. But in this case we have to go a step further. The patient, I find, is correct in believing that she is two month's pregnant, and so the practical question faces us whether we can, by any means, save her from the dangers in her next labour from which she has already suffered in the past? You will, perhaps, answer that, to some extent, this can be done by the premature induction of labour. That is so, but, in private practice and in the higher ranks of society, it is often of the utmost importance that a healthy living child should be born. Let us, therefore, put to ourselves this further question: Is it possible to enable this patient to have a living child?

It is only within the last few years that this question could have been answered, with any degree of assurance, in the affirmative; because, as

you are well aware, if the symphysis pubis be divided, or even if forceps only be needed, there is, nevertheless, some risk to the life of the infant.

The system to which I would earnestly ask your attention is, perhaps, quite novel to you, for it is certainly not generally known to the profession, and, I venture to think, you will all meet with patients to whom it will be of incalculable advantage. We will admit this patient into the Hospital and repair the rectal wall, and will, at the same time, place her on a strictly regulated diet which she will be enjoined to follow to the last day of her pregnancy. If she does so, I may, with confidence, express an opinion that, at the forthcoming labour, the child will be smaller than any she has hitherto borne, but it will be, in every other respect, perfectly-formed and healthy. In other words, I hope we shall save her from a great deal of suffering and danger, and that we may save the life of the child also. To show you that this belief on my part is not over-sanguine I will give you a few brief facts. The principal of the system to which I allude, is very simple, and is based on well known physiological facts. You are, perhaps, aware that more than a century ago it was attempted, by means of frequent bleedings, and by a system of semi-starvation of the mother, to so reduce the size of the foetus, that it might pass safely and be born alive, even through an extremely contracted pelvis; and, if so, you know that the system failed—as it deserved to fail; that in many instances the starved foetus was born dead, while, in many cases, the mother also failed to survive the treatment to which she was subjected. It was recognized, in fact, that such a remedy was worse than the disease. So much discredit was thrown upon the attempt that it is only within the last few years that more rational and more scientific efforts have been made to influence the growth of the foetus by strictly dieting the mother.

We have not yet, perhaps, arrived at a complete system, but we have, undoubtedly, made sufficient progress to be certain of greatly improved results.

Practically, then, the system to which I allude is based upon the exclusion from the diet, as far as possible, of starchy and saccharine foods and of the restriction of fluids. In other respects, but little change is made, and nitrogenous foods are given in moderation. The following is a fair example of the dietary which I have for some years, used with excellent results in private practice:—

For Breakfast.—A small teacupful of tea or coffee, an egg, and two slices of toast.

For Lunch.—Any kind of meat, game or fish, green vegetables, one slice of toast, or a dry biscuit, cheese, one wineglassful of wine, milk, or any other fluid, excepting malt liquors.

At Afternoon Tea.—A small teacupful of tea or coffee, with one slice of bread and butter, or cake.

For Dinner.—The same as for Luncheon.

The quantity of fluid to be taken during each day is, therefore, restricted to about 15 ounces, and some patients at first find it impossible

to satisfy their thirst with this quantity. The addition of a small quantity of lime-juice and effervescing water is sometimes useful, or the patient may be advised to suck thin slices of lemon, if the thirst is considerable.

The result of this dietary is that no superfluous fat is developed on the fœtus, and the bones, although firm, are undoubtedly more soft, and the bones of the head are, therefore, more easily moulded than is the case when the mother is taking an ordinary diet. As in the case to which I shall call your attention, the practical result of this system, in my experience, has been that women who had previously had extremely difficult labors, and who, in many instances, had never born a living child, have subsequently had comparatively easy times, and have had healthy living children at full term.

For example, a lady consulted me, some four years ago, who had a marked degree of pelvic contraction. At her first confinement, after she had been 48 hours in labour, it was found necessary to use the cephalotribe to remove the child; her second child, after equally prolonged suffering, was removed by forceps; the perineum and rectum being most severely ruptured. Cellulitis and septicæmia followed, and she was dangerously ill for about six months, remaining in a condition of invalidism for about five years afterwards. She then came under my care, her health gradually improved, and she again became pregnant. She was at once placed upon the restricted diet I have mentioned, and had a child at full term, perfectly healthy in all respects and borne alive, after a normal labour, terminated in about three hours, and without any instrumental assistance.

Another case which was interesting, from the point of heredity, was that of a lady, whose mother had had eight children, of whom the patient was the only one who survived, all the others having been stillborn, or having lived only a few hours after birth. The mother suffered from a very marked degree of pelvic contraction, and, so far as I was able to ascertain, the shortest time which any of her labours lasted was two days, and in every instance they were terminated by instrumental means. The patient had two aunts, on the mother's side, both of whom had only had stillborn children after most difficult and instrumental labours. The patient herself had been married four years and had had one child, delivered by instruments after a prolonged labour. The doctor who attended her on that occasion, was strongly of opinion that she "would never live through another confinement." When she, therefore, became pregnant again, I was consulted as to the advisability of premature labor being induced. I recommended that the dietary treatment should be tried instead, especially as there were family reasons which rendered it of considerable importance that she should have a healthy living son. She followed the dietary with scrupulous care, and in due time, was confined of a boy, the labour being so easy that the child was born before her doctor could arrive at the house. The child only weighed 6 lbs., but was perfectly well formed. It thrived well, and is now a strong and healthy child.

It would be easy to give you many other cases, because for the last six or seven years I have invariably employed this method in the pregnancy of patients who had any degree of pelvic contraction, or other condition which caused dystocia. And I would, therefore, earnestly advise you to carry out the method in your own practices in similar cases. There is, so far as my experience goes, only one drawback to it, beyond the sensation of thirst, from which some patients suffer at first, and which, as I have already hinted, may be more or less readily alleviated.

But a practical drawback, the reason for which I am unable to explain, but a condition which has happened so frequently that I feel compelled to associate it with the system in question, is that these patients exhibit a tendency to early rupture of the membranes; and thus the first stage of labour seems to be more tedious and painful than it would be if the membranes remained intact, and the hydraulic influence of the amniotic fluid were available for the dilatation of the cervix. It is a fact which is of some practical importance that the quantity of fluid in the uterus in these cases is much less than normal. In other words, the abdomen is less distended than usual, and, therefore, the abdominal muscles are better able to exert their influence during labour—a mechanical fact of much importance. But this diminution in the secretion of fluid may be the cause of the unusual thinning of the wall of the membranes. I usually advise that, during the last week of pregnancy in these cases—that is to say, as soon as the uterus begins to fall in the pelvis—the patient should not leave the house, but should rest as much as possible on the couch during the day, so as to avoid any strain or over-exertion which might precipitate the rupture of the membranes.

Prevention, we all acknowledge, is a hundred times better than cure, and I feel confident that if you will strictly carry out this system of dietary in the patients who have any tendency to difficult labours, or in primipara who have any pelvic contraction, you will save them much suffering and danger; and many infants will be born with or without the assistance of forceps, whom it would be otherwise difficult, or, perhaps, impossible to save.

I hope, therefore, that the case now before us will, in due time, illustrate the manner in which Nature can be assisted, and in which this special danger of pregnancy and parturition can be obviated without the employment of the heroic measures formerly recommended, and merely by a system so simple, and so common-sensible, that it will recommend itself to your patients, while its success and usefulness will amply repay you for any trouble you may take to secure its due observance in suitable cases.—*Medical Times and Gazette.*

FRACTURE OF THE PATELLA.

For a bone of its size the patella certainly gets its share of discussion. When it is fractured, the outcome of whatever method of treatment that is employed is to some extent doubtful, and bad results are not easily overlooked by the patient or his friends. The non-operative treatment seems already to have been placed in its proper niche, but the different aspects of the operative treatment of the condition continue to excite discussion of varying degrees of acuteness. We are speaking only of cases seen within seven or eight days from the time of the injury. The operative treatment of the typical case of fracture of the patella may be divided into two classes: first, treatment by those methods which aim to interfere with the joint as little as possible; and second, the method of free opening and cleansing of the joint with salt solution previous to suture of the fragments. Advocates of the first plan claim simplicity, safety and convenience for the methods they employ, and say that in case of infection the results of their methods are not so disastrous as when the same accident occurs after free opening of the joint. We should, for the purpose of discussing this question from the theoretical point of view, be able to disregard the occurrence of infection. Infection ought never to occur when a simple fracture of the patella is operated upon, and what we ought to think about most is the final result and the means which lead towards perfection in that particular. All the methods of working through a small skin incision leave much to be desired in mere operative detail. We are always working more or less in the dark. We cannot be sure of the condition of the interior of the joint, the exact contour of the fragments or the disposition of shreds of periosteum and synovial membrane, and by most of the methods we are introducing a long thread of foreign material, with a very distinct fluid-conducting power if it is silk, a long distance under the skin, very close to an important serous cavity. The objection urged against more extensive operative work is always against this very extensiveness and the opportunities for infection which may thus be afforded to the elusive bacteria. But, as we have said, infection should not occur, and the corollary of this statement is that only those accustomed to performing all kinds of surgical operations should undertake this particular one. The question of suture material is of great importance, and several materials have been recommended. Here, as elsewhere in the body, an absorbable suture is much the most desirable if there are no mechanical objections to its use. It has long seemed to be the idea of many surgeons that the fragments of a fractured patella were subjected to a great deal of tension, and consequently that suture material must have considerable strength and permanence in order to be useful. The result of this reasoning showed itself in the use of silver wire and thick silk in operations upon the fractured patella. There are, however, several very serious objections to the use of silver wire, which also hold good in the case of silk, but to a lesser degree.

Great tension is not needed to hold the fragments in position after the operation we are considering; in fact, great tension is almost as injurious in bone as it is in soft tissues. The wire is non-absorbable, and is thus sure to cause irritation and perhaps necrosis if left any length of time, not in every case, but in a proportion large enough to be very noticeable. The function of the suture in fracture of the patella is to hold the fragments in apposition long enough for the rigid dressing or splint to be put in place, and to continue acting long enough for the danger of spasmodic or convulsive movements of the muscles to pass off. The importance of the correct application of the dressing is exceedingly great. We do not put silver wire sutures into a torn or cut quadriceps tendon, and we do not use them in the patella. Reasonably strong, and above all things, sterile catgut answers all purposes, and it need not be subjected to any special hardening process. If we are going to perform the extensive operation upon a fractured patella, we cannot do better than suture the fragments with catgut through drill holes not involving the articular surface of the bone, and use extreme care in using the plaster of Paris dressing. The joint ought to be washed out with a hot decinormal salt solution to remove the clots.

Recently a compromise operation has been suggested, and excellent results are reported. This operation is done through a transverse incision and the fragments are tilted up by means of sharp retractors, so as to allow the joint to be washed out as much as possible without having the fingers touch any part of its interior. The suturing is done with catgut, and includes only the periosteum. We may be certain that success in suturing the patella will depend upon two things—asepsis and suture material.

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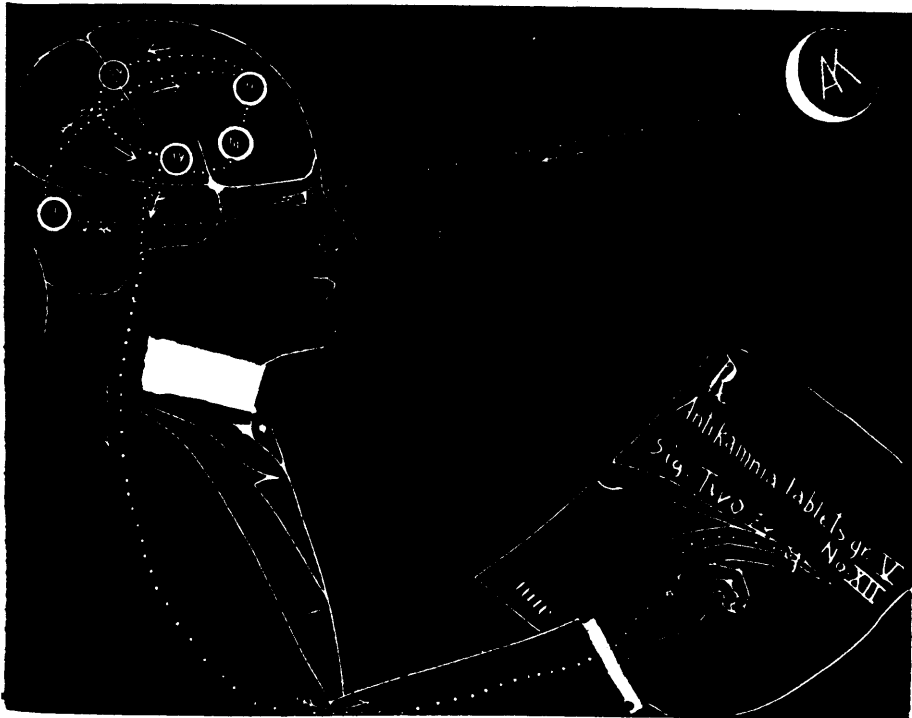
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EDITORIAL.

There is no doubt that sanitary progress owes much to Germany. The Imperial Office of Health of Berlin has not only sought actively the existence of problems connected with infection, but has never hesitated to conduct, regardless of expense, mature experiments, the better to combat the evil. The bacteriological laboratory of Berlin has indeed no equal in points of completeness of fitting up and all-round efficiency. In fact, all similar institutions throughout Germany are alike in this respect. Since 1890 the question has been duly examined "Whether railway carriages as well as railway stations were not active centres for the propagation of tuberculosis?" Since Cornet's experiments, confirming that the dust deposited on the walls and upholstery of an apartment occupied by a consumptive patient, contained the phthisical bacillus, and in its violent form, there was nothing improbable in suspecting that the same seed germs could as well exist in railway carriages, above all in sleeping cars, chiefly occupied as a rule by wealthy consumptive passengers. There was no practical attention given to this important subject until Germany took up the question, and M. Prausnitz demonstrated the presence of the virulent tuberculous bacillus in the ordinary railway carriages. It was then decided to prove the presence of the bacilli, to what an extent they actually existed, as well as devise the best means to secure the disinfection of the said vehicles. Sterilized sponges gathered up the dust

in such parts of the waggon where it had most accumulated. Guinea pigs were accordingly inoculated with some of this dust, with the result that tuberculosis soon appeared. The tests were extended to 45 compartments belonging to the four classes of vehicles. Next 117 animals were further inoculated also with the collected dust, three at once became infected. It was the dust taken from one of the sleeping carriages that communicated the infection, notwithstanding that the vehicles had every appearance of cleanliness. The strangest fact is, that out of the 117 animals inoculated for the special experiment, 45 succumbed to other contagious maladies which were contracted apart from the three deaths from actual tuberculosis. Hence, it was unquestionably the dust emanating from the dried phthisical expectorations collected from the floors of the carriages that communicated the maladies.

Still, it was further necessary to place the matter beyond any possible doubt. In order to do this, sixteen trains representing 383 carriage compartments and arriving at the termini in Berlin, were specially examined by medical authorities, who could not only distinguish between old and fresh expectorations, but were also able to discover and trace at a glance whether such expectorations emanated from consumptive individuals or not. The expectorations were taken from among 31 compartments of the four classes of vehicles, and served to inoculate 91 animals; of the latter 28 succumbed from the special virus contagion contained in the inoculated matters. The remaining animals were killed after six weeks; all were found to be in a healthy condition, except three that had really contracted tuberculosis from the original source. No less than seven different species of bacilli were discovered in the expectorations taken from the 383 compartments. But the number of disease germs was always considerable in all the four classes of carriages. In the first-class for instance, upon a surface of one hundred square centimetres no fewer than 2,583 were revealed, while in the fourth class the total found was 12,624, grading up to the first-class. The floor was precisely the part of the vehicle which proved the most infected, while the ceiling had fewest bacilli. It was not indeed an easy matter to cleanse a whole waggon; but three were found in a very filthy state owing to age, and consequently very contaminated, owing to the fact that the bacteria had been and were artificially introduced. The waggons in question were not only infected with the specially cultivated bacteria therein placed, but also by an enormous quantity of other parasitical germs, which seemed natural to the vehicles despite their apparently orderly look. The disinfecting process consisted of water, soap and carbolic acid,

applied by means of special instruments. It did not destroy the bacteria, it only lessened or retarded their development. Some of the cushions and linings were disinfected at the Municipal establishment. After the operation no disease germ existed, nor were the cushions injured. The compartments *per se* were next disinfected with soap and water and five per cent. of carbolic acid, the process did not kill off the bacteria.

The expense incurred in disinfecting the four classes of carriages varied from 62 to 69 francs per carriage—the former was the fourth class, the latter for the first. The floor of the carriage was measured, and in certain spots the sponges sucked up the soiled matters. The floor was then washed with soap and water; in the case of the third and fourth class cars micro-organisms were found, but in fewer quantities; however, after a short interval, they became very plentiful. It was found that the solution having 10 per cent. of soap deteriorated the wood-work painting; solutions 50 and 75 per cent. weaker were therefore employed by preference; the latter got rid of the bacilli, but only for a short time, the strong solution was the best. Before the washing commenced 5,508 parasites were collected within a 100 square centimetres on the wooden seat, after the operation only 35 were discovered. The wash employed to disinfect the railway cars ordinarily consists of a solution of soap and water of one per cent. strength; it is laid on nooks and put into crannies by means of an ordinary paint brush, then after washed off by the nozzle of a syringe, the places are next rubbed dry with sterilized linen or chamois leather. That disinfects very well and reduces the bacilli considerably. These remarks apply to third and fourth class vehicles. It is not at all easy to disinfect first and second class carriages, bacteria have been found on the cushions and in the braidings, but the real source of pollution is invariably the floor. The latter in the first class carriages is covered over with a movable carpet, which is "supposed" to be shaken and brushed after the termination of each journey. The floor of second class carriages is covered over with a fixed linoleum, which is swept sometime in the day; however, the expectorations in the sweepings being dried up, the probabilities of contagion are all the more dangerous. Over a space of 25 square centimetres of carpet in a first class carriage, no fewer than 46,800 bacteria were found; this number was reduced to 997 after the said carpet had been shaken and brushed.

The outcome of all these several experiments was to secure the daily washing of the floor of railway stations and their walls, equal to the height of a man, and to the placing of spittoons in all waiting rooms. A series of special regulations were drawn up accordingly—and which have

been strictly acted on in Germany since 1st April, 1898—respecting the total or partial cleaning of the carriages, their upholstery, etc. Special places are set apart where disinfecting operations can be carried on effectively. In the case of railway lavatories, a solution of quick-lime answers well, while a piece of soap is placed in the pan of the closets; this common sense practice averts bad smells. The spittoons, which are of a special shape, are emptied each day, and thoroughly flushed. When quick-lime is required, take $1\frac{1}{2}$ pints of pure quick-lime, reduce the latter to small lumps, and add 4 litres (1 litre equals $1\frac{1}{4}$ pints) of water; keep the mixture ever well covered up.

How to Remove Plaster of Paris Bandages.

I have noticed, while in England, that general practitioners appear to shun, to a great extent, the use of the "Plaster of Paris" splints for immobilizations, on account of its being so difficult of removal. Therefore, most prefer the starch bandages, etc., although it is generally acknowledged that the Plaster of Paris is much the best appliance. But with the method which I will mention, the Plaster of Paris is the easiest to remove. It is simply this: Soak some cotton wool in *Peroxide of Hydrogen*, then moisten the splint down its full length with this, for about half-inch wide. When it is thoroughly soaked you will find the plaster is in the same condition as when first put on, and all you have to do is to cut the bandages with a pair of scissors, without any injury to the patient or any trouble whatever. I mentioned this tip at the London Hospital, and I believe they use it altogether now. I saw it done in the States, and I hope this will be interesting as well as useful to your readers.

Contribution to the Knowledge of the Metabolism after Removal of the Ovaries.

The investigations so far published about the phosphoric acid metabolism in osteo-malacic women before and after castration gave by no means uniform results. Curatulo and Tarulli* found in dogs after castration a considerable and permanent decrease of the phosphoric acid secretion in the urine. O. Falk controlled these experiments in two dogs. The animals were fed on horse-meat and pork-fat; the P_2O_5 secretion was determined in the urine (in one dog in feces and urine). The results of his experiments do not convince the author that the castration of female animals has any influence on the phosphorus metabolism. He sees a source of error in the fact that the animals of the Italian observers have been fed on bread, and concludes that the beneficial influence of castration on osteo-malacic women can not be explained by experiments on healthy animals

*American Journal of Obstetrics, August, 1899.

ANAESTHETICS.

BY H. BELLAMY GARDNER, M.R.C.S., L.R.C.P., LOND.,
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I propose to pass under review and criticise in the articles appearing under this heading the most recent work in perfecting the administration of anæsthetics. Whenever possible, I shall personally test the various methods and substances advocated by different authors, and express an opinion upon their practical value to the general practitioner.

The safety of the patient is always to be the first consideration, and no drug, whatever may be its apparent ideality in producing a painless narcosis, should be entrusted to the hands of an uninstructed person for administration.

There can be little doubt that a large number of fatalities under anæsthetics in this country are due to the unpractised administrator; for, whatever be the gas or vapour used, signs of respiratory obstruction—the main cause of these accidents—cannot be detected by the unskilled, nor rectified in time to avoid death when unrecognized by “the man at the helm.”

Time and trouble must be expended by those who may be called upon to place their patients in a condition of narcotic sleep before they can justly expect to do so without jeopardising the lives of the latter and their own reputations. Everyone who prescribes opium to his patients knows the vastly different effects produced upon half a dozen people by a similar dose; and it is only the skilled and experienced man who can say what will be the likely result of a definite amount administered to a particular individual.

In exactly the same manner the practised hand administers anæsthetic vapours to his patients, adjusting his methods and the quantity exhibited to the type of human being he is treating, and to the physiological pathological, and mechanical peculiarities of that one person. Broad roads may be laid down by those who are qualified to teach the methods of work, but in comparatively few instances will these be enough to prevent an unskilled rider from mishap due to unexpected obstructions on the way. The main truth to be grasped before administering a general anæsthetic is that any obstruction to free respiration must be *immediately* rectified at whatever time it occurs; this obstruction most commonly arises from the base of the tongue touching the pharynx, and it may be obviated at once by raising the chin, or pushing forward the angle of the jaw. A somewhat insidious form of asphyxia arises under chloroform from this cause, and is often unrecognized, owing to the shallow respiration being almost inaudible to the administrator. Slight blueness of the face should give warning that some asphyxial factor is at work and will eventually cause depression. Another cause of obstructed respiration is to be found in the nose. A nasal airway partly blocked, but sufficient for normal require-

ments will not always be adequate to maintain proper oxygenation under an anæsthetic, and a *small mouth-prop between the teeth* will frequently allow a patient to be tranquilly anæsthetised who would otherwise be a source of anxiety throughout the operation. *Laryngeal spasm may be produced by operative procedures upon the rectum, urethra, spermatic cord, and bladder*; *stretching of the cervix uteri* also will often cause a reflex spasm of the glottis, indicated by high-pitched crowing inspiration. This is a real difficulty, and should first of all be treated by deepening the anæsthesia; then, if the spasm does not relax, the asphyxia it produces must be relieved by allowing plenty of air, and, in children, the operator should be warned of its occurrence, and should be requested to desist from the dilatation or stretching until it passes off.

Another point which must receive careful consideration is that of the *danger of very shallow respiration* from the point of view of the heart. In operations exposing the jugular vein in the neck, I have repeatedly observed the effect of deep thoracic inspiration in efficiently emptying that vessel. The right side of the heart is greatly assisted in its suction-action by the movement of the chest wall, and, when the latter is very feeble, the right auricle and ventricle alone are obliged to accomplish the work of emptying the venous channels; a dusky pallor under chloroform may often be made to pass away by stimulating the breathing to ampler expansion movements. Rubbing the lips with a towel and, if the lid reflex be present, a little more of the anæsthetic will often accomplish this result. Of course, if the lid-reflex be absent, and other signs of depression appear, the anæsthetic should *always* be withdrawn and artificial respiration resorted to.

While remarking upon the concurrent asphyxial factor, it should also be borne in mind that cellulitis and abscess in the neighbourhood of the trachea, cystic thyroid tumours and other forms of growth in the neck, besides all those conditions which fix the jaws or prevent the possibility of opening the mouth, must always be regarded as productive of grave danger under a general anæsthetic. Patients with paralysed vocal cords or growths within the glottis, may be successfully anæsthetised with chloroform; but only when, as in the above mentioned conditions, unremitting attention is paid to their progress and tracheotomy can be immediately performed if asphyxial symptoms supervene.

VERSION AND CONTRACTED PELVES.

We are in receipt of several letters from subscribers asking various questions which all rest upon an uncertainty regarding the proper place of version in the management of cases of dystocia.

We would like to give satisfying and final replies to all; we would like to speak *ex cathedra* and feel that this obstetric ghost has been finally laid to rest; but enquirers are not of the class who take their beliefs in the *ex cathedra* way. Nothing but sound argument will expand their faith. In so far as the employment of podalic version for delivery of the fetus in cases of contracted pelves is concerned, we must recognize that two marked changes in the situation, as it existed in the times of the late Sir James Simpson, have come to the front. It is no longer believed that compression and traction with the forceps, when applied to the antero-posterior diameter of the fetal head, causes an increase in the bi-parietal diameter. The Fry forceps were constructed to meet this exploded idea. The cranial bones, hinged at the base of the skull, elongate under compression in the occipito-mental diameter, and do not to any extent bulge in the spaces between the blades of the forceps. One desideratum which militates against forceps in cases of such contraction as prevents engagement of the head, the want of moulding, might be offset by version if the latter allowed a few hours' time for passage of the head through the pelvis. In such cases many a head could be brought through the pelvis by continued traction on the breech which could not pass head first under forceps traction. But no such needful time can be taken, if we would deliver a living child.

The second change in the situation to-day which lessens the availability of version, is the great improvement in the two child-saving operations: symphysiotomy and Cæsarean section.

When the obstetric mind was being formed on this question of version, it had to face as alternatives a mortality for the mother so great that death of the child as the result of version became of no consideration.

Ask a medical student to tell you why we should succeed in delivering a head by version which we cannot with the forceps, and you will seldom get an intelligible answer. Ask a teacher and he will say it is because we get a better adjustment of the head to the pelvic inlet, and perhaps he may add that we can apply greater power of traction. The first is more or less true. In a few cases it is due to the peculiar shape of the pelvis, in many of them to the want of skill in the operator in applying forceps to an unengaged head. The second argument has not been proven. We cannot safely apply more traction to the after-coming head by trunk traction than we can apply with the forceps. The additional aid which we give by supra-pubic pressure on the unengaged head can make the statement true as to the power applied, but such pressure, we must believe, does what we long thought the forceps did, increases the bi-parietal diameter, and in this case also that of the occipito-frontal diameter.

A strong factor that has added much to the popularity of version has been that it permits the operator to avoid meeting the question of a capital operation.

Most difficult labor cases are largely impromptu in character, as regards an important operation, and this by-way method (version) has always enough promise in it to tempt a following. Perhaps we should not complain that there is a situation left which is antagonistic to the use of the knife.

Notwithstanding the greater fetal mortality which must always appertain to version over forceps, symphysiotomy, or Cæsarean section, it would have an impregnable and satisfactory claim to selection after forceps if we could always guarantee promptly successful passage of the head through the pelvis once version has been accomplished. But, unfortunately, we can never obtain such assurance where forceps have failed. When we consider this fact, and when we realize the comparatively lessened risk in symphysiotomy and Cæsarean section, by which methods the child has a vastly surer life prospect, are we not justified in calling version an obstetrical compromise? To manipulate the fetus until it is dead, when we can perform a craniotomy on a dead child, rather than boldly meet the issue at the start, is distinctly a compromise, not necessarily wrong, but still a compromise.

Two able papers, recently published in *Obstetrics* by Williams and Dobbin (see *Obstetrics*—May, June July and August), draw attention to some interesting facts bearing on this question of version.

In their study of 1,000 cases of labor occurring in the Johns Hopkins Hospital, a most instructive fact is shown, that much the greatest fetal mortality occurred in those cases of pelvic contracture which were of moderate degree, the percentage being 25 in the class having a conjugata vera diameter of from 10.75 cm. to 11.50 cm., and 60 per cent. with the same diameter measuring from 10.00 cm. to 10.75 cm.; while the mortality was but 20 per cent. where the same diameter was from 9.00 cm. to 9.75 cm. The number of cases represented is not sufficient to make these particular figures the basis for fixed conclusions, except that they are in harmony with much more extensive figures by other writers. The striking import of these figures is, *that it is in border line disproportions between fetal and pelvic diameters that we get the worst results for the fetus, and it is border line cases that are most frequent*; that, filling the mind of the physician with doubt, cause him to follow the tentative route of cervical dilatation, forceps, version, and possibly basiotripsy. First, the fetus is shocked by severe forceps compression of the brain, then the heart is shocked by the manipulation of the cord necessary in version; and if it still lives, it must run the gauntlet of asphyxiation. Crushing the after-coming head is not a difficult or dangerous operation to the mother, if one has the proper tools, a Braun's or Martin's basiotribe, but very few general practitioners have such an instrument, or can get one from a neighbor physician, and the operation then becomes very difficult.

Did we have all the statistics, it would be a close race which causes the greater mortality in obstetrics, puerperal infection, or border line dystocia. Let us put a greater burden of proof upon the physician who would perform version in cases of pelvic contraction; let us demand greater certainty and less tentativeness that he can bring the head through the pelvis when he has delivered the body. Let us call it by its right name, an obstetrical compromise—*Obstetrics*.

EPITOME OF CURRENT MEDICAL LITERATURE.

INTERNAL MEDICINE.

Paroxysmal Hemoglobinemia; Report of a Case.

P. S. ROY.* The chief causes of this condition are cold and fatigue. In this case the attack came in a woman 60 years of age, after the fatigue of sight-seeing. She had suffered from uric acid attacks, and had, after the hemoglobinemia disappeared, a sub-acute arthritis of the wrist and elbow. She also gave a history of Raynaud's disease. The attack was typical—chill, headache, vomiting, soreness of the muscles, particularly those of the neck: temperature 102° , generally lower; marked coolness of the skin, and slight jaundice followed later. The urine was quite dark; specific gravity 1022, which is higher than usual, and 50 ounces were passed in every 24 hours. No malarial history could be obtained. The mind was very stupid for two days. The urine was examined on the third day and the diagnosis was not made until then.

Intermediate Altitude for the Consumptive.

ANDERSON.† In a large percentage of cases an intermediate altitude yields in the treatment of consumptives very satisfactory results, where lower and higher altitudes fail to benefit the patient. A record of some two hundred cases sent to an altitude averaging from 3000 to 4000 feet, where the higher altitudes, within five to six weeks, failed to show any improvement in the patients' condition, seems very conclusive. The author finds the Mesilla Valley in New Mexico the most favorable resort for these cases. Frequently within a few months the patients will have improved sufficiently to enable them to reside in a higher altitude if desired.

Typhoid Fever; Note on Two Epidemics in the Iowa Hospital for Insane.

G. BOODY‡ draws the following conclusions: 1. Cases of typhoid fever are quite rare, and the subject is deserving of thorough investigation wherever an epidemic occurs; in order to determine the relative frequency of the disease, all methods for confirming the diagnosis should be rigidly applied. In these two epidemics it occurred but once in 43 cases. 2. Of the patients who recovered, 25 per cent. showed marked improvement in nutrition and muscular strength, while the remainder only reached their former condition in these respects. Insane patients with typhoid fever do not show such a degree of improved nutrition after recovery as do those without mental complications. The patients who improved mentally showed a corresponding favorable change

* Phila. Med. Jour., Sept. 2, 1899.

† Therapeutic Gazette, July 15, 1899.

‡ Jour. Amer. M. A., September 2, 1899.

in nutrition, and those whose mental status returned to normal made the most striking changes in this direction. 3. Of this number, 16.6 per cent. all dementias, seemed brighter mentally, but relapsed as soon as convalescence was completed, except one case; 2.77 per cent. all melancholias, made partial recovery, and one is just fairly able to resume the ordinary duties of life; 5.55 per cent., one a case of katalonia and one of acute mania, regained completely their former mental status. The behavior of cases of dementia would lead one to think the fever had some influence on the mental condition, but it is of no value, since relapse occurred very soon. The prognosis in melancholia is favorable for some improvement; in acute mania it is generally favorable for recovery.

Report of a Case of Cerebral Meningitis Manifesting Extraordinary High Temperature.

R. B. CHRISTIAN * reports a case of meningitis, without complications, in which the encephalon alone was involved. The patient was a blind girl, 26 years old. On the first day she complained of fullness of the head and nausea and had a temperature of 105°. For three weeks remarkably high temperature were recorded, verified by five thermometers, three of which were broken, when the excessive heat would have forced the column of mercury higher than the capacity of the instrument would allow. On the second day of the illness temperature by mouth registered 110°, when the thermometer broke; from then for three weeks the temperature varied between normal and 118°, being usually excessively high. The patient was in a state of deep stupor for ten days prior to death; there was no extraordinary elevation of temperature after she got into this condition until a short time before death.

A Newer Pathology of Epilepsy.

BROWER† reports the views of Dr. H. Krainsky. The observations of Dr. Haig are confirmed as to the relation of uric acid elimination to the seizures, namely, a diminution in elimination just before the paroxysm and an increase in the amount after the attack; but he disagrees with him as to uric acid being the retained poison causing the attack. Krainsky has succeeded, by a number of experiments, in demonstrating that epilepsy is an intoxication and that the poison is in the blood. By injecting a few c.c. of blood drawn from a patient in a status epilepticus into a rabbit, violent epileptic seizures were produced in two or three minutes, while blood taken after the seizure produced no effect. He then proceeded to determine the toxic agent, and by experiments demonstrated that it was carbonate of ammonium, a substance closely related to uric acid. The bromides were found of value, not only for their sedative effect, but for the ease in which they decompose this salt. Since the formation of carbonate of ammonia is the product of abnormal nitrogenous metamorphoses, one can readily see the importance of a dietetic treatment.

* N. Y. Med. Rec., Sept. 2, 1899.

† Medicine, September, 1899.

The Avoidance of Preventive Hemostatis in Laparotomies.

This thoroughly surgical article by DR. A. VON GUBAROFF* contains many suggestions which are as interesting as they are novel. After seventy-four experiences the author states that he ties only what bleeds and this after he has cut it. He profits by this procedure as follows: 1. A better idea of anatomical relations is gained than would be possible if a ligature *en masse* had been applied. 2. Secondary hemorrhage is less likely. 3. Much time is gained, as many an unnecessary ligature is put on in the old way. 4. Fixed tumors can be made freely movable in this way alone. Especial stress is laid upon the fact that ligature of veins is always unnecessary, because they cannot bleed after corresponding arteries have been properly tied.

Justifiable Artificial Abortion and Induced Premature Labor.

W. C. BOWERS.† In any any disease of a woman which is aggravated to so great a degree, because of pregnancy, as to endanger her life, and which cannot be remedied so that she may live after labor, induced abortion should be considered in her interest; or, if late enough in pregnancy, in the interest of both mother and child. The possibility of waiting for the viability of the fetus should always be thought of if such a thing is possible without jeopardizing the woman's chances. The reasons for premature emptying of the uterus are many; the procedure is considered in these diseases and conditions, viz.: nephritis, advanced tuberculosis, aneurism, valvular lesions of the heart, chorea gravidarum, peripheral neuritis of pregnancy, goitre, diabetes mellitus, eclampsia, cancer of the uterus, melancholia, hystero-epilepsy and insanity, irreducible displacement of the uterus, unavoidable hemorrhage of placenta previa, accidental hemorrhage, and hyperemesis gravidarium. The last is probably the most common reason for interrupting pregnancy.

Vaginal Fixation in Paralysis and Retroflexio Uteri.

A. Schücking‡ the first to treat the uterus thus, claims that none of the modifications of the operation which he proposed in 1887 has insured the patient against recurrence of her trouble, because none have sufficiently bent the anterior wall nor sufficiently stretched the posterior one. Not all prolapses and retroflexions require an operation. Still, when any one is to be performed, his own seems to the author more nearly free from danger than any other. One point on which Schücking rightfully lays stress is that in the pursuit of his method the peritoneum need not be opened.

Difficult Points in Gynecologic Diagnosis.

W. Krussen.§ When the history of a case indicates clearly or possibly the presence of some pelvic lesion, local examination should be insisted upon. The administration of an anesthetic is often indispensable in making this examination and no positive diagnosis should be made

*Centralblatt für Gynakologie, July 29, 1899.

†Jour. Amer. Med. Assn., September 2, 1899.

‡Centralblatt für Gynakologie, August 5, 1899.

§Medicine, September, 1899.

in an obscure case without its employment. Pregnancy is always to be remembered as a possible condition as causing increase in size in uterus and abdomen. The early recognition of carcinoma of the uterus is absolutely essential to its successful treatment. The chief symptoms are hemorrhage, watery or purulent discharges, and pain; but these occur so irregularly that many cases may present only one of the trio before extensive invasion has occurred. An early diagnosis can only be made with absolute certainty by microscopic examination of either an excised wedge from the suspected cervix or of portions of the endometrium removed by curettage. Epithelioma of the vulva is less frequent than malignant disease of the uterus; it is liable to be confounded with simple vegetations, with lupus of the vulva, and with syphilitic affections. After malignant disease, the recognition of ectopic gestation ranks next in importance. The differentiation of appendicitis from pyosalpinx or ovarian disease is another interesting point in gynecologic diagnosis. A frequent error is that of mistaking ovarian cysts for ascites, though ordinarily careful palpation and percussion will distinguish between them. The differentiation between fibrocystic tumors of the uterus and ovarian cysts is very difficult and at times impossible. Many of the mistakes in diagnosis are due to the fact that sufficient time and thought are not given, nor all available clinical methods and instruments employed, in studying the individual case.

Treatment of Fissures of the Papillæ.

Le Maire* used a saturated solution of orthoform in 80 per cent. alcohol in some sixty cases of fissured papillæ. The pain disappeared very readily, and the fissures healed rapidly. It is to be recommended especially in small fissures; in deep ones the results were very unsatisfactory. Disturbances in digestion were not noticed in the children during the use of orthoform upon the mother's breast.

Management of Pregnancy Complicated by Abdominal Tumors.

R. B. Hall† discusses the management of ovarian and uterine tumors complicating pregnancy. The danger of abortion or premature labor following the removal of ovarian tumors has been exaggerated. Frequently the tumor is discovered only at the time that pregnancy occurs. The danger to the mother is not markedly increased by the fact that she is pregnant so far as the operation relates to the removal of the tumor. The ease with which patients recover under these conditions is illustrated by a case in which recovery was uninterrupted and a healthy child was delivered at full term. Some cases abort in spite of all precautions, and when this occurs the danger to the patient is greatly increased. As to fibroid tumors of the uterus, operation means hysterectomy and therefore the sacrifice of the child. Operation is advised in all cases if there is no chance of recovery without it; also in cases where the tumor cannot be lifted out of the pelvis and where there are any complications

*Amer. Gynec. and Obstet. Journ., August, 1899.

† Therapeutic Gazette, July 15, 1899.

in the tumor itself, such as twisted pedicle or ruptured cyst. Operation is not advised in cases of ovarian tumor of moderate size that lies above the uterus and when the tumor itself is too large to occupy the pelvic cavity, if the woman had not suffered from the tumor and there were no complications. The question as to when operation should be performed in fibroid tumors of the uterus must depend on each individual case. The question as to saving the child must be discussed if the woman has passed four or five months of gestation and it is possible to carry her to or near the full term of pregnancy.

Preliminary Report of Transplantation of the Ovaries.

James F. McCone,* in a series of experiments on the ovaries and fallopian tubes of animals, has reached the following conclusions: 1. Contact between ovary and tube is not essential for conception. 2. Ovaries grafted from one animal to another part of the same animal continue to grow, to functionate, and pregnancy can and does occur. 3. An ovary grafted from one animal to another of the same species continues to functionate; maintains the normal condition of tubes and uterus. Pregnancy can occur. 4. Ovaries grafted from one species to another continue to functionate and seem to prevent post-castration atrophy of tubes and uterus. 5. Best results are obtained where the raw surfaces of the transplanted ovary is sewed to a denuded surface. The chief practical value is in the suggestion of the conservation of healthy ovarian tissue even on the opposite side from a patent tube, the possibility of grafting in the human species and the prevention of atrophy and post-castration nervous symptoms.

Is the Integrity of the Amnion a Condition *Sine Qua* for the further Development of the Ovary after Rupture of the Chorion, etc?

Neugebauer † maintains in contradistinction to the views of Price, that the integrity of the amnion is necessary for the further development of the embryo. He refers to a case of ectopic pregnancy described by him in 1898. The child lay perfectly free in the peritoneal cavity between the loops of intestines, presenting no trace of the embryonic membranes. He concludes that the integrity of the umbilical cord and placenta, and not the amnion, decides the fate of the embryo in the case of a rupture of the membranes.

Some of the Commonest Reflex Symptoms from Disease of the Rectum.

Walkins. ‡ The most pronounced and annoying reflex symptoms are those due to disease of either the rectum or generative organs. Owing to the abundant supply of cerebro-spinal and sympathetic nerves, they refer all pains in the pelvic region to the generative organs. A great number of cases therefore, applying to the gynecologist for relief suffer from some rectal disturbance. The three cases reported are typical ones of this class. The patients applied for gynecological treatment. When questioned as to whether any trouble existed in the rectum it was always

* American Journal of Obstetrics, August, 1899.

† Centralblatt für Gynäkologie, August 5, 1899.

‡ Medicine, September, 1899.

answered in the negative. Upon examination an area varying in size from a 25-cent piece to a dollar was found where no mucous membrane existed. It begins at the muco-cutaneous junction and extends up the wall of the bowel. They are neither tuberculous nor syphilitic in character, and rapidly yield to local treatment. In one case the ovaries had already been removed by a gynecologist and it had been suggested in the other two cases. All three cases had great relief from local treatment.

A type of Paralysis in the Distribution of the Peroneal Nerve following Labor.

Aldrich* reports three cases in which this form of paralysis was present. The first case was one of prolonged labor, followed by a right peroneal paralysis and neuritis with extension to the other side. The recovery from the neuritis was slow, with a persistence of some atrophy and paralysis. The other two cases presented the same picture, with the exception that one was a left-sided case. Why this nerve should be affected in these cases of prolonged labor is readily understood when one considers the anatomy of these parts. The sacral plexus is joined in most cases by the lumbo-sacral cord formed by the fibres of the fourth and fifth lumbar segments. This cord passes downward, winding over the sharp angle of the linea innominata into the pelvis, a position just suitable for pressure in a case of long labor. The fibres of the sacra-lumbar cord keep their identity even in those cases in which they join the sacral plexus and form the peroneal nerve upon leaving it. Little need be said as to treatment, as it resolves itself into treatment for any ordinary neuritis. The hot air treatment has proved the most satisfactory.

Organotheaphy in Gynecology.

Newman † concludes from his own observations and the investigations of others as follows: The thyroid gland exerts an inhibitory action upon the pelvic genital organs, especially upon the epithelial elements of the endometrium. As a result of this specific action there follows a retardation of hemorrhages from the uterine mucosa, an action antagonistic to that exerted by the ovarian secretion. In gynecology, thyroid therapy is especially indicated in hemorrhagic affections of the uterus, pelvic congestion, uterine fibromata, hemorrhagic endometritis and chronic tubal disease. The more chronic the case, the more rebellious to thyroidization. The thyroid also causes an increase in metabolism of the mammary gland and is consequently indicated in all cases of insufficient lactation. Owing to the tendency to thyroid intoxication, it is well to discontinue the drug for a period of a week to ten days at regular intervals during the course of the treatment.

Rectal Irrigation in Gynecology.

HYDE, ‡ The use of rectal irrigation in some gynecological cases has proven of very great benefit. For the irrigation either a rubber, aluminum or glass tube is used, and at least two gallons, preferably

* Amer. Gynec. and Obstet. Jour., August, 1899.

† Therapeutic Gazette, July 15, 1899.

‡ Am. Gynecological and Obstetrical Jour., August, 1896.

six to eight, of a saline solution, temperature 110°-115° F., are employed. This has advantage over the vaginal douche in that a larger amount of fluid may be used and it comes in contact with a much greater vesicular surface. The writer recommends it especially in: 1, leucorrhœa; 2, as a substitute for vaginal douching in young girls; 3, acute and chronic ovarian and tubal lesions, with the possible exception of pyosalpinx; 4, intestinal paralysis following sepsis; 5, after major pelvic operations, to relieve any abdominal discomfort or tympanitis; 6, intestinal colic; 7, doubtful in constipation. It has only been employed in two cases coming under these seven heads where no good was observed.



PATHOLOGY AND HISTOLOGY.

A New form of Elementary Granules in Blood, Sputum and Tissues of Man.

L. GRUENWALDT* found a new form of granules, which he calls hypeosinophilous; the majority of the round cells of sputum, of sero purulent exudates, of pus and of inflammatory new formations contain minute to minutest granules, which are stained with eosin, but are decolorized by acids and mostly by alkalis, and which in Ehrlich's triacid-stain appear fuchsin red. A great number of cells, therefore, which were thought to be filled with homogeneous protoplasm, contain granules, while other cells, the granules of which are called neutrophilous, now appear in another light. It is necessary that before staining the specimens are either simply dried in the air or heated very carefully. The author found the same phenomena in the blood; the hypeosinophilous granules are seen in mono and polynuclear cells. Based on his findings the author asks for a revision of the previous nomenclature of the granules.

The Preservation of Mitotic Figures after Death and after Transplantation and its bearing upon Transplantation—Experiments.

The question, how long after death or extirpation mitoses can be demonstrated, has so far not been dealt with exhaustively. H. WOLFF† kept a series of specimens for a long while (up to six weeks) at room-temperature, in the incubator or in the ice-chest, and showed by control experiments that the existing mitoses can be demonstrated as long as it is possible to demonstrate the finer texture of the tissues. A progress of the mitotic process or the appearance of new mitoses does not take place after death. In aseptically kept pieces of epidermis the author, too, could find the same mitoses as in a fresh specimen; the reliability or the success of a transplantation can therefore not be proven by the existence of a few mitoses.

* Centralblatt für innere Medicin, 1899. No. 30.

† Archiv für klinische Chirurgie. Vol. 59, No. 2.

A Case of Foreign Body in the Heart.

OPHULS* reports a post-mortem case in which a piece of needle $2\frac{1}{2}$ cm. in length was found in the wall of the heart. Its tip projected about 7 mm. into the cavity of the left ventricle and was covered by a thin greyish-white film with glistening surface. At the bottom the projecting part is surrounded by a cone-shaped mass of dense white scar-tissue, which shows that the needle must have been in its present position at least several weeks, possibly longer. The needle was undoubtedly a thin trocar introduced while making an explorative puncture of the pericardium. There was no evidence of a thrombus formation at the point of lesion, in all probability due to the smoothness of the foreign body and rapidity of the blood current. There was nothing to indicate that the death of the patient was in any way caused or even favored by the presence of the foreign body in the heart. In fact the post-mortem examination revealed several morbid conditions entirely without connection with the abnormality in the heart, which in themselves constituted a cause amply sufficient to explain the cause of death. During life the heart did not exhibit any symptoms which could be attributed to the presence of the foreign body. There was no murmur.



SURGERY.

A Year of Abdominal Surgery at the Pennsylvania Hospital, Philadelphia.

F. T. STEWART.† During the year ending May 1, 1899, there have been performed in this hospital 164 operations implicating the peritoneum. Of these 28, or a trifle more than 17 per cent., have succumbed. In 8 of the fatal cases a general peritonitis existed at the time of operation, in 12 a peritonitis which was localized and suppurative; 5 died of peritonitis developing after operation, 3 being traumatic cases, 1 a strangulated hernia, and 1 a case of ectopic pregnancy; 2 died of exhaustion, and 1 died of shock and hemorrhage following gunshot wound of the liver and vena cava. This death rate is very low, considering the class of cases entering the hospital, many of them delaying until no other resort is left. The majority of the abdominal sections were life-saving procedures. There were 31 hernia, 46 cases of appendicitis, 1 liver abscess, 1 case of hydatid disease of the liver, rupture of the urinary bladder, 10 hysterectomies, 4 stab wounds of the abdomen.

Acute Abdominal Symptoms Demanding Immediate Surgical Intervention.

M. H. RICHARDSON.‡ A careful study of initial symptoms and their importance cannot be too strenuously urged upon the general practitioner. Three classes of abdominal lesions must be considered; 1, those in which hemorrhage is the chief factor; 2, those in which peritonitis is

* Occidental Medical Times, August 15, 1899.

† Phila. Med. Jour., Sept. 2, 1899.

‡ Phila. Med. Jour., September 2, 1899.

the chief factor, and 3, those in which intestinal obstruction is the chief factor. Practically, all of these permit cure. Recovery depends largely upon the promptness of intervention. The most fatal lesions are those which quickly produce extensive gangrene. If all acute lesions were operated on at the very onset, the mortality in the worst would be slight. The diagnosis of an acute lesion that needs immediate operation must be made from the initial symptoms the exact nature of the lesion may be deferred. Pain, palor, feeble pulse, low temperature, means hemorrhage; with irregularities in menstruation and tender breasts, extrauterine pregnancy; after operation, internal hemorrhage. In a general way a diagnosis as to the probable cause should be made exact enough to guide the surgeon to the affected half of the abdomen. In cases of doubt, exploration is indicated when the symptoms enumerated are present, but operation should not be performed by the inexperienced, as is so often the case in first magnitude operations.

Nervous Complications of Fractures of the Lower End of the Humerus.

A. BROCA and A. MOUCHET* write that the above mentioned disturbance much more commonly follows injuries of the lower than those of the upper end of this bone. As regards age, the young are much more often affected. The median, the radial, or the ulnar nerve may suffer, as may any two of them, or indeed all three at one time. Such nerve lesions may be divided into three kinds: 1, primary; 2, secondary; and 3, remote. The first named date from the time of the injury and are partial or complete paralysis, resulting from the affected trunk being cut off, torn, contused, or held in a fissure. The secondary varieties manifest themselves several days after the accident, and are due to the "callus" or a misplaced fragment pressing upon the nerve in question. Remote paralysis was observed by the authors in two cases as late as eighteen years and twenty-two years respectively after injury. In both a decided "cubitus valgus" was apparent, with progressive approximation of the olecranon and inner condyle; in this way the groove for the ulnar nerve was gradually narrowed with consequent squeezing of it. In every case electro-diagnostic methods must be employed. Treatment in the primary form is to be operative and undertaken at once in case paralysis is complete, otherwise one can wait a few months. In the second variety the nerve must nearly always be freed from its confining "callus" or fragment. The remote paralysis requires as a rule that the furrow for the ulnar nerve be made wider.

Dangers of Hydrogen Dioxide in Surgery.

SPENCER† reports a number of interesting, though unpleasant, results in the use of hydrogen dioxide in cavities with small outlets. It has been clearly demonstrated that the expansive force of the peroxide not only made new channels in the tissues, but even carried and deposited pyogenic organisms in these channels. The gas generated

* *Revue de Chirurgie*, June 10, 1899.

† *Therapeutic Gazette*, July 15, 1899.

by the peroxide travels into the subcutaneous areolar tissues, along nerves and arteries, and separates the layers of muscle fibers. Since the introduction of peroxide mastoiditis has become more frequent than formerly; this the author attributes to the use of hydrogen dioxide in middle-ear disturbances. The author concludes that it is unsafe to use it in infected wounds in certain locations, with or without pus, in abscess cavities, either acute or chronic, where the walls are supposed to be weak, in closed cavities, and in the tissues surrounding the larynx and trachea, especially in young children.

The Evil of Ritual Practice in Circumcision.

A. MILLER* enters a plea for the abolition of this operation by laymen. The dangers from infection and hemorrhage are not apparently realized by the public. The men who perform this operation ritually possess neither medical knowledge nor surgical skill; they have no idea of the existence of germs, understand nothing about the theory of sepsis and antisepsis, and in a great many cases are even void of personal cleanliness. The operation should in every instance be performed by a physician.—*Exchange*.

INEBRIETY CURES.

"The Hayden Treatment" has been recently launched in Liverpool. This treatment is for the cure of inebriety, which, ever since the beginning of the Keeley Cure, has been a fruitful field for the charlatan. In this instance the drug employed was discovered by an Irish Canadian by the name of Hayden, and, as in similar instances, it has been necessary to keep the nature of the drug a profound secret. Marvellous claims are made for the new treatment, which is said to absolutely cure seventy-five per cent. of all cases; there is no restriction upon those who are under treatment, and all those who wish may indulge in the moderate use of spirits. The cure is said to be effectual in about three weeks. The claim that seventy-five per cent. are cured will, of course, attract little attention on the part of those who seek this treatment, and such a trivial circumstance as the institution having just been opened will make little impression upon them. The new exploitation is strikingly like the red cinchona cure of a few years back, but the method of its exploitation shows a striking resemblance to the late treatment of the morphine habit by "Husa." The wonderful plant which passed under this name was obtained by a physician who alone could put himself in communication with certain mysterious Indians in the Everglades of Florida. These Indians exchanged the precious plant for beads and trinkets at some out-of-the-way place. This marvellous plant was unknown to botanists and, singularly enough, it could not be preserved by drying or other means, so that it could be examined. An analysis of the extract of the "Husa" preparation showed it to contain a small quantity of burnt sugar, morphine and alcohol. How cheap and simple are the means which successfully fool the public!

* N. Y. Med. Rec., Aug. 26, 1899.

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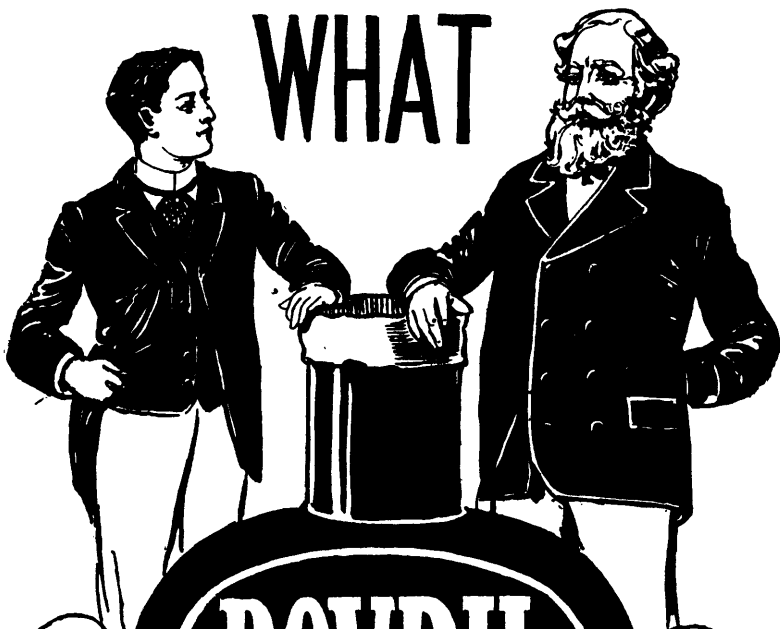
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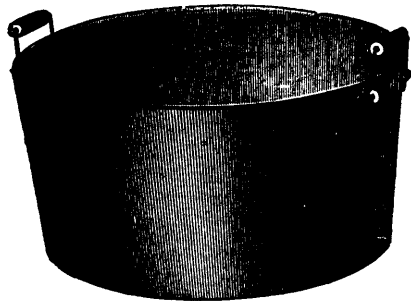
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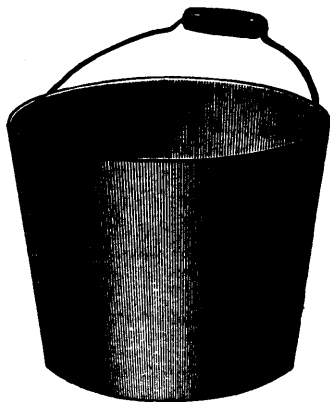
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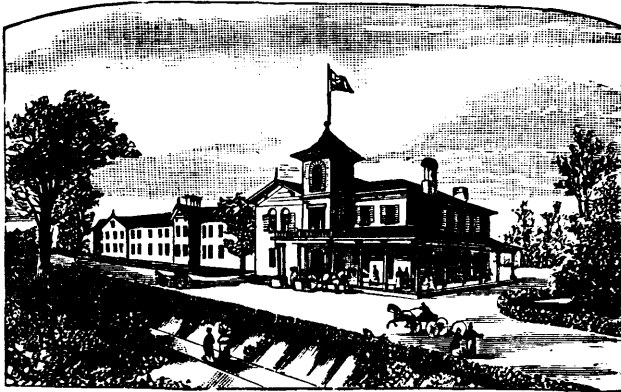
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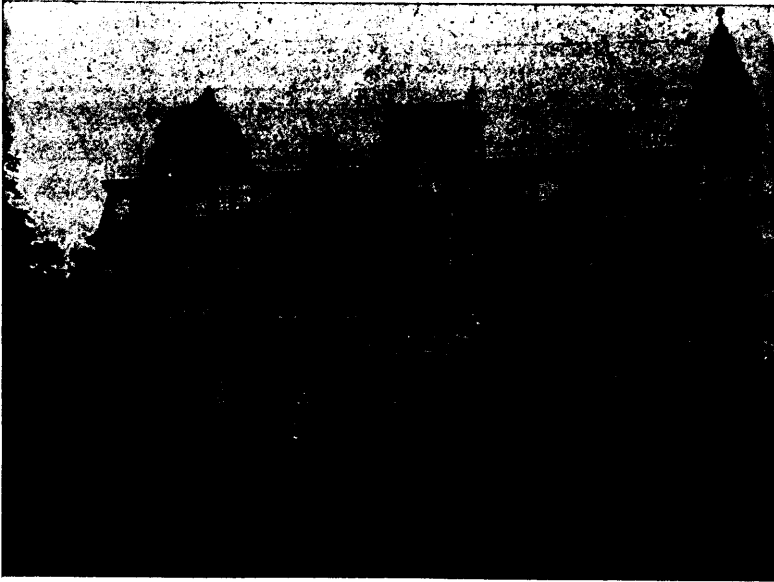
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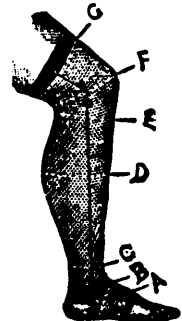
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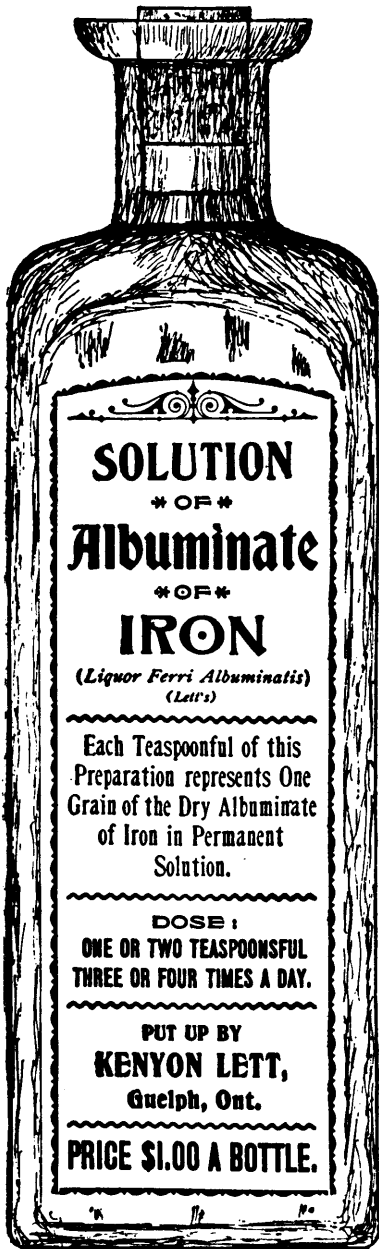
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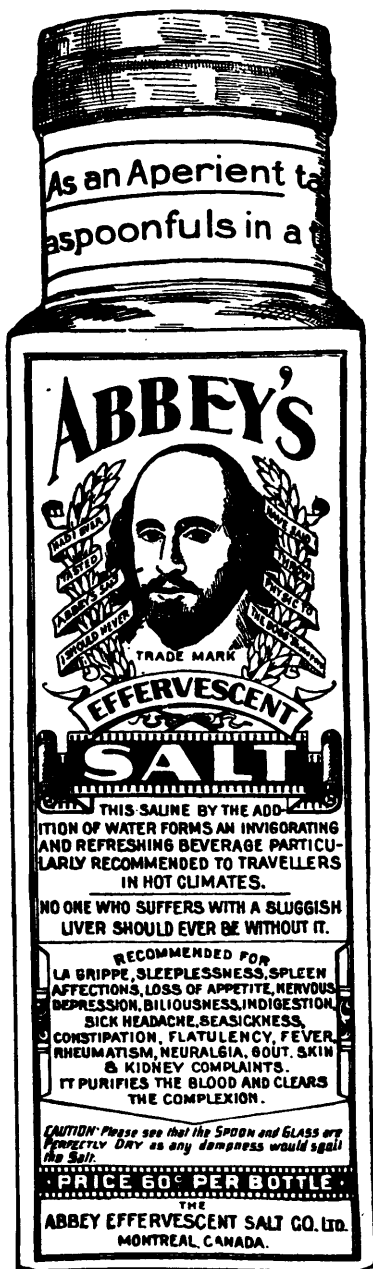
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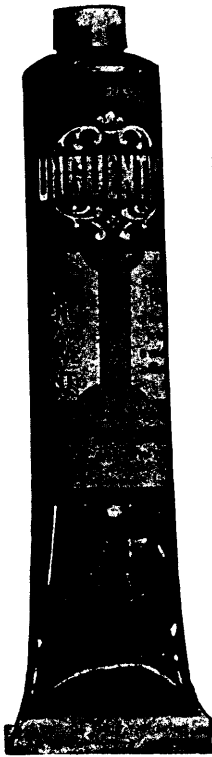
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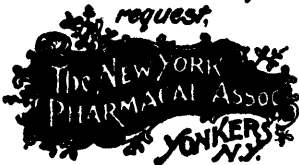
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BAYER'S PHARMACEUTICAL PRODUCTS

SOMATOSE A tasteless, odourless

(Trade Mark.) nutrient meat powder; it contains all the albuminoid principles of the meat in an easily soluble form. It has been extensively employed and found to be of the greatest service in Consumption, diseases of the stomach and intestinal tract, Chlorosis and Rickets. It is of great value in convalescence from all diseases. SOMATOSE strengthens the muscles and stimulates the appetite in a remarkable manner. SOMATOSE has been found to act as a most efficient galactagogue. Dose for adults: a level teaspoonful three to four times a day with milk, gruel, coffee, etc.

IRON SOMATOSE (Ferro-Somatosé).

A first-class tonic, containing the albuminous substances of the meat (albumoses) organically combined with iron. Special indications: Chlorosis and Anæmia. Daily dose: 75 to 150 grains.

MILK SOMATOSE (Lacto-Somatosé).

A strength-giving food containing the albuminous matter (albumoses) of the milk. Daily doses for children: 1 to 2 teaspoonfuls; for adults: 2 to 3 table-spoonfuls.

TRIONAL (Diethylsulfonmethylethylme-

than). A most reliable and quickly-acting hypnotic of the Sulfonal group. Dose: 16 to 20 grains, in a large cup of hot liquid.

IODOTHYRINE The active principle of

the thyroid gland. It is most efficacious in Strumous Diseases, Myxœdema, Obesity, Rickets, Psoriasis, Eczema, and Uterine Hæmorrhages. Dose: 5 grains two to eight times a day for adults; 5 grains one to three times daily for children.

LYCETOL (Tartrate of Di-Methyl-Piper-

azine). Anti-Arthritic, Uric Solvent. Has a marked effect on the diuresis. Dose: 16 to 32 grains daily.

ARISTOL (Dythymoldiiodide). A Cica-

trisant which is an excellent, odourless substitute for iodoform and highly recommended for Burns, Wounds, Scrofulous Ulcerations, etc.

EUROPHEN (Isobutylorthocresolio-

dide). A perfect substitute for Iodoform. Odourless and non-toxic. Has a covering power five times greater than Iodoform. Especially useful in Ulcus molle et durum.

PROTARGOL A new silver preparation.

Most reliable in cases of Gonorrhœa. Antiseptic wound healer. Excellent results in cases of Gonorrhœal Ophthalmia. Solutions of $\frac{1}{2}$ to 2 $\frac{1}{2}$ Ointments.

LOSOPHAN (Triiodometacresol).

Particularly efficacious in the treatment of all kinds of cutaneous disorders caused by animal parasites.

TANNIGEN (Triacetyl of Tannin). An

almost tasteless intestinal astringent. Most efficacious in Chronic, Acute and Summer Diarrhoeas. Adult dose: 8 grains every three hours.

TANNOPINE (A new intestinal astrin-

gent). (Formerly "Tannone"). Special indications: Tuberculous and non-tuberculous Enteritis, Typhus. Dose: 15 grains, three or four times daily.

SALOPHEN (Acetyl of Para-Amido-

salol). Specific for Influenza, Headache, Migraine, Acute Articular Rheumatism, Chorea, Sciatica. Dose: 15 grains, four to six times daily. In powders, etc.

ANALGEN (Ortho-Ethoxy-ana-Mono-

benzoylamidoquinoline). A

specific for Malaria. Highly recommended in Acute Rheumatism of the Muscles, Sciatica, Facial Neuralgia, etc. Malaria: before the paroxysm of fever 20 to 30 grains; between the fevers 15 grains every 3 hours. Rheumatic affection and Sciatica: 15 grains, 4 to 5 times daily. The use of ANALGEN is accompanied by a reddish coloration of the urine, which, however, is not produced by the presence of blood corpuscles. The red color of the urine may be avoided by taking alkaline waters.

PHENACETINE-BAYER (Acetyl

of Para-Phenetidin).

PIPERAZINE-BAYER (Diethylene-

diamine).

HEROIN (Di-acetic ester of morphine).

An excellent substitute for codeine. In doses of 0.005 gramme, 3 to 4 times daily, it has given excellent results in cases of Bronchitis, Pharyngitis, Laryngitis, Catarrh of the Lungs in phthisical persons, and in Asthma Bronchiale. In the latter two cases, the dose may be increased to 0.01 gramme.

CREOSOTAL (Creosotum carbonas

puriss). A mixture of the phenol carbonates of creosote. Most valuable in tuberculosis of the lungs. Doses of $\frac{1}{2}$ to 5 drachms per day, in wine, brandy, or cod liver oil.

DUOTAL (Guaiaecolum carbonas

puriss). Great success in cases of Pulmonary Phthisis. Doses of 8 to 96 grains per day.

SULFONAL-BAYER (Diethylsulfondi-

methyilmethan).

SALOL-BAYER (Phenyl Ether of Sali-

cylic Acid).

Samples and literature may be had on application to the

DOMINION DYEWOOD & CHEMICAL CO., TORONTO.

Sole Agency and Depot in Canada for all "BAYER'S" Pharmaceutical Products. (Wholesale only.)

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