LEPERS OF D'ARCY ISLAND

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FIG. 1.—THE LAZARETTO FROM THE BOAT, D'ARCY ISLAND.

THE LEPERS OF D'ARCY ISLAND.

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British Columbia has a leper colony. Its existence is not widely known, for those who compose it are of a race whose affairs rarely reach the public ear. But for years to come students of this strange disease may find in Canada's most western province, material of the most interesting and instructive nature to aid them in their researches. About a league off the eastern coast of Vancouver Island, and separated from it by the waters of the Gulf of Georgia, lies the pretty little island of D'Arcy. Viewed from the opposite shore or from the deck of a vessel as she ploughs her way seaward, it presents a delightful picture to the eye, for unlike surrounding islands it exhibits neither a dull face of shifting sand nor a forbidding reef of granite. Almost its entire surface is covered with a dense growth of pine, cedar and spruce, among which the great ferns toss their green arms in a vain upward

struggle to the smile of the sun. This bank of verdure extends to the edge of the pebbly beach, where at high tide the waters of the Pacific kiss and caress the feet of the forest monarchs, whose verdant crowns stand out in bold relief against the milder tints of sea and sky. Although the gem of the East Coast Islands, the shores of D'Arcy Island are rarely pressed by the feet of the white man, and few indeed are the prows which grate upon its beach. Travellers in these waters dread the storm which forces them upon its coast even for a night, and the superstitious Siwash trolling for salmon or paddling to the city for his season's supply, pulls with a swifter oar as he discerns ahead the outline of her shores. For hidden away yonder in their little cabins under the grateful shade of the fir with their hot blood burning out their life, the victims of this plague are slowly dying with their faces to the rising sun.

There are certain conditions of life which are habitually associated with races and epochs whose acquaintance are made through the record of the historian. The marvellous advances which have marked the development of medical and hygienic science have accomplished much in the elimination of some of these loathsome diseases which, begotten of filth and squallor and nurtured by the same repulsive parents, rendered the social life of the sixteenth century one that even to this day we contemplate with feelings akin to disgust.

The sharp serveillance which among those of Saxon speech is exercised over the public health, especially in the larger centres of population, has produced sanitary conditions which, though far from being perfect, are a reasonable safeguard against the more malignant types of disease. This comparative immunity from the more distressing and unsightly maladies has generated a certain degree of ignorance among the laity of many of those disorders which still prevail in some corners of the world, and which continue to baffle the skill of Occidental science.

The knowledge of the vast majority of those who speak the language of Shakespeare concerning the scourge of leprosy is confined to that obtained in the biblical account of the cleansing of Naaman the Syrian, and the late miracles described in the pages of the New Testament, some certainly do know that to-day it is a common disease in the Oriental lands, particularly in the southern latitudes, in China, Japan, India Hawaii and the Sandwich Islands. But few indeed of the intelligent easterners are aware that at the present time on the Pacific Coast of the North American Continent the health and sanitary authorities of the larger cities are fighting over again the battle which was waged in older lands when the disease was epidemic in those climes. This is one of the penalties which we are paying for empire, for, Mr. Rudyard Kipling to the contrary notwithstanding, blood is not the sole and only price of Admiralty.

The thirst for empire of the British people, and the equally potent passion of the American Commonwealth for commercial conquest have led both to seek trade privileges in the kingdom of China and the Islands of Japan. Trade concessions from these countries have rendered necessary reciprocal privileges on the part of the Saxon nation, and the consequence has been an enormous influx of eastern population the price of our unrestricted trade in the Orient.

The introduction of this plague to the Pacific Coast of British Columbia, was due to the immigration of the Mongolian races to her shores. Filthy as are the lives of many of the warlike Indians who dwell along the inlets and river mouths of the coast of that province, the tribes have hitherto escaped from any such visitation as leprosy. But with the advent of the

Chinese came also the plague peculiar to the East. Herding as they do in shacks, sheds, and even boxes, all crowded into a very small area, the race is a very difficult one with which to deal. The attention of the health officers of the City of Victoria was first attracted by the peculiar habits of some of the denizens of the Chinese quarter who were habitually sleeping under the sidewalks of the streets. A sharp investigation followed, and after a diligent search the sanitary officer succeeded in locating five lepers who had successfully eluded the viligance of the quarantine officers at William's Head, and had brought to the city the loathsome disease in its initial stages. Following the policy of isolation, most notably exemplified at Molokai, in Hawaii, and also adopted at the Tracadie Lazaretto in eastern Canada, the City Council, eight years ago, removed the victims to D'Arcy Island where a line of huts,

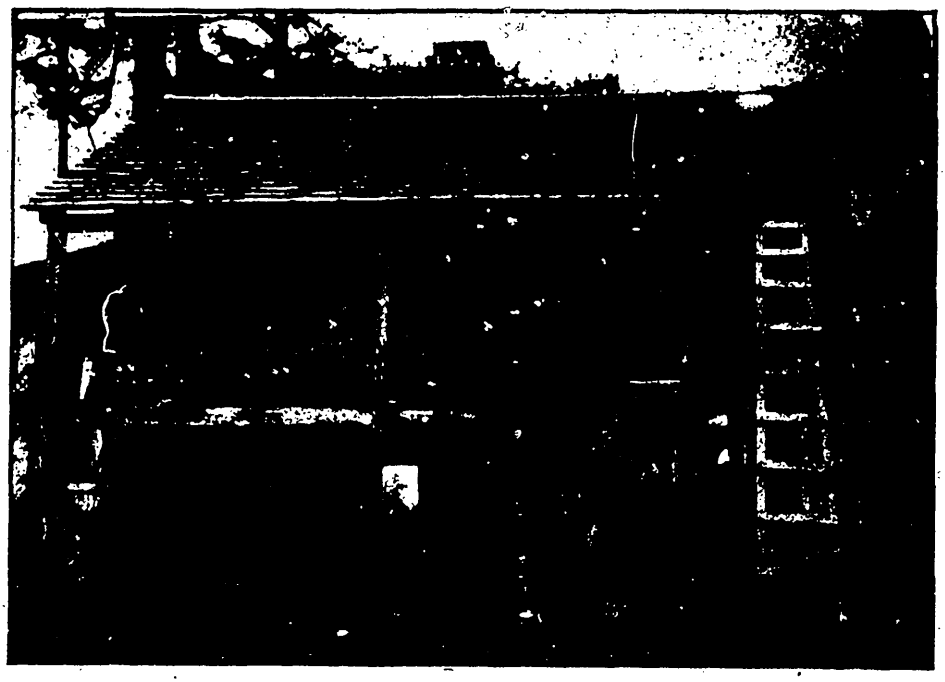

FIG. 2.

all under one roof, were erected for their accommodation, the use of the island for this purpose being granted by the Federal Government. Here the unfortunate sufferers are regularly supplied with rations and properly provided for without imperilling public health. Other municipalities have united with Victoria, and now whenever a leper is discovered in any part of the province he is at once conveyed to the Lazaretto ; the corporations, having inmates, contribute pro rata to the aggregate cost, and every three months the sanitary officer of the city of Victoria visits the settlement with a sufficient supply of food for the following quarter.

It was on one of these occasions that, through the courtesy of Dr. Fraser, Medical Health Officer for the city of Victoria, the writers had an opportunity of visiting these unfortunate but interesting people. It was one of those delightful mornings in May when all the forces of nature unite in a chorus of delight. The sunbeams, shimmering on the surface of the ocean, flashed

their heliograph signals into the stern face of old Mount Baker, who responded with a blaze of light on his grim countenance. Behind us the Olympics, the sentinels of the sea, thrust their white heads through the cloud-mantle which enveloped them, while the sun's great searchlight sought their frowning depths, and snapping the fetters of the frost king brought the crystal waters babbling over the crags, and laughing with wild delight through crack and crevice down to the heaving bosom of the deep sea. Even men joined in the pæans of praise, for far to starboard in the city the zephyrs lazily caressed the ensign which floats in the perpetual sunshine unfurled in honor of the natal day of Her Britannic Majesty. The very joyousness of the day seemed only to emphasize the hopeless fate of those seven weary watchers by the sea, who day by day long for the last journey and the long sleep; for as our droy grates on the shore, and we hurry up the incline to their homes, the real wretchedness of their condition becomes evident. They have gathered on the little platform (see fig 2), which extends the entire length of the cabins, and with listlessness and indifference portrayed in their very attitudes, await with querulous expressions our approach. Every development and every type of this loathsome disease is apparent in the little group before us. The spokesman, a strong-framed man, (see fig. 3), betrays by the incessant twitching of the muscles of the face that the disease has attacked the nerve centres, accompanying which are the nameless pricking, burning and jerking features of this sensitive type of the plague. Gradually the sensory disturbances of the skin, and the painful swellings of the large nerves will decline, and the victim relapse into an anæsthetic state which precedes the fall of the curtain on this dismal stage of life. Another has the tuberculated form. The upper lips are distorted, the eyes bleared, the ears enlarged and the limbs swollen, (see fig. 4), finally to end in a break down before death permits the scarred body to be covered by parent dust. The most hideous form was that of one shown in one of the cuts where the face had become a great mass of cruel half-healed sores most revolting to behold, the countenance never very prepossessing was rendered perfectly loathsome by the disfigurements of disease.

Fig. 3.

Fig. 4.

The alert Sanitary Inspector, who by familiarity has been rendered more or less impervious to its horrors, advances with a cheery salutation which is as cheerily returned. The first question of the officer is practical and suggestive. "How many are there, John?" "Sellen." "Where is the eighth?" For an answer John points over his shoulder with a thumb from which the first joint is gone, and the lady of the party involuntarily shudders, for back there amid the wild shrubbery just bursting into bloom, with the waves

singing their requiem, lies the poor yellow tenement out of which the troubled and lonely spirits have at last struggled into rest and peace. And then, under the leadership of John who navigates with difficulty (some of his toes no longer answer to the will call) we follow the little foot path leading back to the enclosure where the garden is located.

A rude fence of pickets has been erected around it, for John and his companions in misery are great poultry fanciers, and these feathered creatures are no respectors of gardens. Splendid vegetables where here growing including potatoes, lettuce, onions and cabbage, all well attended with the exception of one corner of the potato plot. When questioned as to the reason of this oversight our guide simply raised his hands and showed the great sores, which marked his latest loss, and the simple gesture, more eloquent than a volume of words, was sufficient explanation of the seeming neglect. Then we pushed through the tangled luxuriance of shrubbery, and

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came on the little mound which marked the resting place of the last sufferer, and hurried back over the rocks, which the ivy vainly sought to conceal with her mantle, to the cluster of cabins overlooking the sea At this moment, for the first time, our guide observed that the party included a representative of the gentler sex. "Oh, laddee, laddee," he exclaimed, and the distorted features and inflamed eyes lit up with pleasure as he bowed repeatedly before her with Oriental grace. Who may fathom the workings of his mind? Weeks had lengthened into months and months to years, and these again had dragged round their successive cycles, for while suffering may be the sacrament of life, it does not hasten its flight. In all these years who can tell what passionate yearnings he may have had for far Cathay, and for those days of his younger manhood sweet to the human heart? Whatever the color of the skin, when arms of love encircled his neck, and the endearments of wife or sister or sweetheart or eastern mother give to life a tenderness and charm. Little wonder that even the alien face of a white woman may have recalled to his poor mind a suggestion in his expression of wistful womanly sympathy of days long since dead.

The monotony of the existence (for its use in this connection seems a travesty on the word "life,") of these unhappy creatures can hardly be described No change in its recurring miseries is noticeable save the transformation which comes over their little world with the return of the seasons, and the change wrought by the progress of disease upon their wasted forms. Back among the pines the wild flowers beckon them, but their haunts are rarely visited. Indeed it is doubtful if any of them have explored the little realm whose possession none will dispute with them. The lassitude and depression, mental and physical, which is the first symptom of the disease, unnerves as the dissemination of the virus extends throughout the body until there is neither volition nor vitality left to carry them from place to place. When this stage is reached the end is near, each dwells in his own cabin. To the spectator the only distinction between them is in the different degrees of unsightly deformity and squalor which they exhibit. Sightless and shrunken eyeballs hide behind ulcerated lids, crippled and fingerless hands with difficulty adjust the clothing which conceals emaciated forms while huge crusts of dried exudation cover wide areas of indolent inflammation. Out upon the blue waters of the Gulf of Georgia can be seen the black hulls of the vessels which bear the gold hunters northward, or the long trail of smoke, the breath of the giant *Empress* as she beats in from the flowery kingdom ; but these are but reminders of a life in which they can no longer have any part. The lapse of time is marked on a Chinese calendar, and their only music is the scream of the sea gull and the monotone of the waves as they lap the pebbles on the shore.

Since the establishment of the station only one white man has been incarcerated upon it. He was shunned by his mongolian fellow sufferers, and as in a community of this kind the patients are dependent upon one another for mutual assistance, the white victim speedily sank from neglect and loneliness. The survivors refused even to bury his body until threatened with having their supplies withheld. This seemed to appeal to their reason and effectually overcame their obstinacy.

No objection was offered by the disfigured patient whose portrait is given, while a medical man transferred some scabs from his face to a test tube for experimental purposes, and he seemed to suffer no pain whatever. With much difficulty the accompanying photographs were secured, and they cost us the good-will of the village. Thereafter they found fault with the supplies which had been brought and could not be induced to express a favorable opinion on anything. Indeed they disputed the hitherto undisputed prerogative of the Saxon in that of grumbling. Strange to say the product of their own country were the stores to which the greatest exception was taken. Rice, flour and Chinese tea were scornfully rejected, though in the line of spirits they prefer the native whiskey, which resembles gin in flavor. A barrel of salt pork which had been brought up was by unmistakeable gestures doomed to life on the ocean wave as soon as we withdrew. No dependence, however, can be placed upon the requests for they are as whimsical as children.

The station is maintained at a minimum outlay, though each man is allowed fifty pounds of rice per month, and all the flour, pork, tobacco, tea, oatmeal, etc., which they can use, yet the annual expenditure does not exceed $1,000. They raise plenty of fowl for their own use, and at the time of our visit there were about one hundred and fifty chickens and thirty or forty ducks, whose characteristic animation was in marked contrast to the surrounding scene of inanimation and decay. For a time swine were kept, but the station was not strong enough to raise food to fatten them, and as

the colony was too weak to catch and slaughter them breeding was discontinued. With the exception of the products of the garden and poultry yard, the station is now entirely maintained by imported supplies.

A curious feature in connection with the Lazaretto is that the friends of the inmates never inquire for or send any message to them. Shut up from their kindred and race, and visited only three or four times a year by white missionaries, and by the city officials, little wonder that sometimes they become desperate to return to China where no restriction is placed upon their movements.

Not long since a leper succeeded, through the agency of his friends, in escaping from the island and returning home, but this is the only case of that nature since the establishment of the station. When annoyed, as on the occasion of our visit, they will sometimes threaten to return, but as they have no vessel, not even a row boat, the threat is likely to be an idle one. Instances have occurred where in order to escape banishment to D'Arcy victims of the disease have hastened their own end. One such occurred in Chinatown a few years ago, when the sanitary officer, on his rounds in search for small-pox, discovered a Celestial in bed suffering under the initial stages of leprosy. All arrangements were made for his removal, but when the following day the official entered the room he found the man to be dying. The interpreter had disclosed the intention of the authorities and John, in order to elude them, had taken an overdose of opium.

The station is maintained on the principle of the strong helping the weak. The supplies, including the coffins, are placed in a store-house and each man helps himself as necessity requires. Their footwear is confined almost exclusively to overshoes, as many of them have lost some of their toes and their feet are too painful to enclose in shoes.

Ancient as is the disease modern science is still powerless to cope with its ravages. By a system of segregation contagion has been prevented, yet it is still a matter of doubt whether or not the malady is transmitted by contact. Experiments have been conducted in which criminals have been inoculated with the virus without contracting the disease. Some of the victims at D'Arcy Island were removed from white homes where they were employed as cooks, yet no whites in the city here ever contracted it. No specific has been discovered to counteract its ravages. After an attack of erysipelas, or of typhoid fever, lepers have been usually better for some time. The microbes of the one seemingly having a weakening effect on the germs of the other. Whether a solution of the problem will ultimately be reached along that line remains to be seen.

We left the island; the evening was casting a sombre hue on the shore and the waters. Before us the bay was dotted with the white sails of the yachting fleet, and crowds of holiday-makers thronged the streets; but amid it all our thoughts would unwittingly revert again and again to the little island with its lonely colony of unfortunate men who, far from home and friends, and all that makes life worth living for, are passively waiting for the coming of the night.

TWO MONTHS' WORK IN GYNÆCOLOGY AND ABDOMINAL SURGERY.

By LAPTHORN SMITH, B.A., M D., M.R.C.S., (Eng.), Montreal.
F. O. S., London; Fellow of the American Gynæcological Society; Fellow of the British Gynæcological Society: Professor of Clinical Gynæcology, in Bishops' University; Surgeon-in-Chief of the Samaritan Hospital for Women; Surgeon to the Western Hospital and Gynæcologist to the Montreal Dispensary.

As the last two months have brought me many cases, which though of no special interest to the specialist, yet had each in its turn an absorbing interest for the general practitioners who kindly placed them under my care, I thought that I would be performing a duty as well as a pleasure if I should write out my notes and place them before your many readers; so that they and I might draw some profit by studying them together. Some of the cases were very simple ones, while others were most serious, but I will relate them as they came before me day by day.

CASE I.—On the 22nd of August I was consulted by Mrs. M., age 19 years. She was unwell too often, only two weeks between her periods, which lasted a week. Menstruation began at fifteen years and was always profuse until her marriage at eighteen. She had one child seven months ago, which she nursed for two months when she weaned it because she was unwell. She also had diarrhœa as often as seven times a day, the motions being watery. What with menorrhagia and the diarrhœa she has lost twenty-three pounds in the last four months. Before making an examination, I pictured to my mind, first a large uterus, because there must be a large surface to bleed from, and secondly a retroverted uterus, pressing on the rectum. On examination I found both of these conditions, with another which had not yet had time to produce its symptoms, a lacerated cervix. There was also endometritis as evidenced by the discharge, and also by the gentlest possible introduction of a blunt sound causing bleeding. The sound entered four and a half inches instead of two and a-half, and pointed directly downwards so that it could be felt distinctly through the posterior vaginal wall. The cervix pointed forwards, upwards, and touched the symphysis.

It could not be lifted by manual efforts, and it was only by catching the cervix and drawing it down that I was able with the sound to unlock the fundus from the promontory of the sacrum. It was then quite easy to place it in a good position, there being no adhesions. As she came to me to be cured I determined first to dilate to give me room, second to curette to remove the spongy mucous membrane which is always present when the circulation is interfered with, the curetting to be followed by the application to the whole of the cavity of equal parts of Churchill's iodine and carbolic acid; third, to remove the long and torn cervix by Schroder's amputation thus rendering the uterus shorter, lighter and more easily dilated at the next confinement; and then to insure replacement by shortening the long ligaments. These four operations were *accordingly done at one seance* at the Samaritan Hospital on the 24th of August. The patient made an excellent recovery the only after treatment being hot douches to favour involution, good plain food and iron strychnine and phosphoric acid mixture as a tonic. She got up in two weeks and I heard from her two months later stating that she was feeling well now, and had not had the slightest return of her former sickness and had been unwell once, but it only lasted two days, and very little at that.

CASE II.—August 28th. At the Samaritan Hospital I performed a vaginal removal of pus tubes and ovaries and vaginal fixation on Mrs. D. twenty-eight years of age, who had been a sufferer for five years, ever since her marriage. when she contracted gonorrhœa. She was sterile, suffering from dysmenorrhœa, which compelled her to go to bed, dyspareunia and painful locomotion. I had treated her off and on for nearly a year and knew that these symptoms were due to a retroverted uterus with fixation, and that this fixation was due to pelvic peritonitis and the peritonitis was due to leakage of pus tubes. I would have left in one ovary had they not been both small, contracted, and as hard as cartilage, and I feared that doing so would make the operation fail to cure the dysmenorrhœa. I had great difficulty in digging them out of their bed of dense adhesions, and my assistant thought it would have been easier, quicker, and more satisfactory in every way to have removed them by the abdomen in the Trendelenburg posture, but I thought it worth while to have taken this extra trouble in avoiding the abdominal cicatrix. She made a good recovery although she suffered a good deal of pain for the first few days.

CASE III.—On September 2nd Mrs. B., thirty-five years of age was operated on at the Samaritan Hospital for lacerated cervix and perineum, due to unnecessary haste in terminating her first confinement with instruments. She had been suffering ever since from reflex disturbances of the digestive, circulatory and nervous stem. These operations continue to give the most satisfactory results, lthough the benefit sometimes is not perceived for several months.

CASE IV.—On September 5, at the Samaritan, Mrs. W, thirty-three years of age, from Lynn, Mass., had curetting and Alexander operation performed for menorrhagia and retroversion without fixation. Her case was almost identical with Case No. I.

CASE V.—At the Samaritan on September 8th I performed ventrofixation on Mrs. G., of Montreal, thirty-two years of age, who complained since several years back of the usual symptoms of retroversion. I could not perform Alexander's operation because the uterus could not be lifted either by the sound or by bi-manual manipulation. On opening the abdomen I found the fundus tubes and ovaries adherent in Douglas cul de sac ; they were easily detached, however, and as one tube was open, nothing was done to the tubes or ovaries. The uterus was suspended by stitching the round ligaments near the cornu to each side of the abdominal incision. She made a good recovery.

CASE VI.—On September the 9th at the Western Hospital I performed vaginal laparotomy on Mrs. H., aged twenty-four years, who had retroversion with fixation, and also suffered from an irritation, and profuse discharge from the uterus as well as from menorrhagia. There was also severe bilateral laceration. She was dilated, curetted, had the cervix removed, and had the anterior vaginal wall opened and the left tube and ovary which were in very bad condition, removed. The right one, which contained pus, was also removed, but the right ovary after having been punctured, was allowed to remain. The uterus was then fixed to the vagina in anteversion. As a number of cases from whom I removed double pus tubes a year ago, but allowed one or both ovaries to remain, have made splendid recoveries, I feel much encouraged to continue this conservative work, more especially as the pus tubes can be removed through the vagina. The patient is cured of her pain and has no discomforts of the premature menopause, and no scar in the abdomen to tell her or anyone else that she has undergone this serious operation. Indeed I even hope that by using catgut to tie the tubes or better still by not tieing them at all, and by dilating them if they are closed, some of these women who were sterile before may become pregnant without the aid of the tubes.

CASE VII.—On the 13th September, at the Samaritan Hospital I removed both ovaries and tubes from Miss G., twenty-five years of age, who had been suffering since many years from dysmenorrhœa. She had retroversion with fixation and the ovaries and tubes were badly torn while removing them, and as she was anxious to be cured of the suffering every month I did not venture to leave even a piece or one. The uterus was suspended to the abdomen by the round ligaments and she made an excellent recovery.

CASE VIII.—On the 14th of September I dilated and curetted the uterus of Mrs. W. for high temperature after miscarriage. After curetting I made a thorough application of carbolic and iodine, and packed the uterus well with iodoform gauze wrung out of bichloride. She made a good recovery.

CASE IX.—On September 17th, at the Western Hospital I removed the uterus and both ovaries and tubes from Mrs. P., aged 44, who was reduced to a very anæmic condition by the presence of a fibroid tumor, the size of a cocoa nut. She also suffered a great deal from dysmenorrhœa. She was anxious that I should leave one ovary, but when I opened the abdomen and found both ovaries converted into cysts the size of a hen's egg, and also both tubes in a condition of hydro-salpinx I thought it unsafe to leave either of them, and made a clear sweep from one side of the pelvis to the other, leaving only the cervix uteri to support the pelvis. The long incision was closed with twenty buried silkworm gut sutures and the skin was closed with one subcutaneous silkworn gut. She made an excellent recovery, and I have met her out walking since. During about a month she complained of a stitch in her side, but one day, soon after her return home she lifted one of the children when she felt something give way and the pain in her side left her. I presume this must have been an adhesion.

CASE X.—On the same day at the Western Hospital I performed ventro-fixation for retroversion on Miss L., age 34. As the vagina was very small I did not like to undertake vaginal fixation, and as I thought the uterus was fixed I could not do Alexander. This, however, proved not to be the case, and on opening the abdomen the uterus was easily lifted up and attached to the abdominal wall. She made a good recovery and has gone back to work.

CASE XI.—On the 19th of September, at my private hospital I performed Schroeder's operation on Mrs. M., thirty years of age, who had a very severe laceration of the cervix, the lips being converted into an eroded and cystic mass. She had been under treatment in different cities and institutions for nearly a year and has never had a child since her first, and that one nine years ago. Before amputating the cervix I dilated and curetted. She made a good recovery, and if she should have another child I believe that she will have good health. But if she remains sterile I would think that her tubes were diseased as she had some symptoms of this trouble.

CASE XII.—On the same day at my private hospital I performed an Alexander on Miss Y., aged 27, who complained of pain in the rectum and a nervous feeling in the legs, due to the uterus being retroverted but not fixed, and also pain in the right side which I thought was due to a prolapsed ovary, as I could feel it in Douglas cul de sac. I omitted to examine her for displaced kidney until a month later, after she had left my private hospital.

CASE XIII.—On the same day at my private hospital I performed Alexander on Miss H., twenty-six years, who was suffering for three years with pain in the rectum. For three years the uterus has been quite upside down but was easily replaced. The round ligaments were quickly found and shortened and stitched to the inguinal canal. Her operation proved successful in every way, there being primary union in both cases.

CASE XIV.—On the 20th September at the Samaritan Hospital I removed large hemorrhoids from Mrs. P., by Whitehead's method and she made an excellent recovery.

CASE XV.—On the same day at the same place I removed the breast and cleaned out the axilla for cancer in Mrs. C., sixty-two years of age. She has made a good recovery.

CASE XVI.—On the same day and at the same place I removed pus tubes and ovaries from and did ventrofixation on Miss R., a servant girl who had been seduced, had a child, and contracted gonorrhœa and had several severe attacks of pelvic peritonitis which had fixed the uterus, tubes and ovaries in one mass. She was unable to work, but was anxious, if she could be cured, to return to work and lead a good life. In order to make her cure more certain and perhaps to remove a possible source of temptation, no effort was made to save even one ovary. They and the tubes were both removed and the uterus was fixed. Good reports of her, morally and physically, have lately been received.

CASE XVII.—The next day 21st of September, at the Western Hospital I operated on Mrs. M., aged 40, for incontinence of urine. She had had a very severe instrumental labor more than a year ago, since which she has had to wear large pads to catch the urine. Her family physician was unable to stop it in any way. If she remained in bed she could hold her water for an hour or two, and then it would trickle out if she moved or took a long breath, and when she went about her work it would run all the time, keeping her clothes wet and always smelling of urine. She was given iron and strychnine and phosphoric acid during several months without any effect upon the incontinence, although I have known this to cure several similar cases. A careful examination failed to detect any vesico-vaginal fistula, on the contrary, on filling her bladder with normal salt solution the latter flowed out beside the catheter. There seemed to be no life or tone to the sphincter. There was cystocele or falling of the anterior vaginal wall with the bladder; also rectocele with lacerated perineum. Although I have seen a great many patients with these conditions; and noticed quite commonly that they desired to micturate frequently, and that they complained of a sensation as though some urine always remained in the bladder, as indeed it does, yet I do not remember to have had a case in which they caused incontinence. I therefore feared that the cure of these conditions alone might not suffice to cure her of her trouble, and I had some intention of at the same time shortening the relaxed sphincter or of taking a reef in it. This I found was quite easy to do after I had removed the vaginal mucous membrane to the extent of two and a half inches in length and an inch and a half in breadth. In order to tighten up the sphincter, I made the denudation further down towards the meatus than usual and instead of drawing the margins of the denuded area together with a purse string suture as I usually do, I tightened up the sphincter with a running catgut suture which was buried in the muscular layer of the bladder right down to the urethra. The vaginal mucous membrane was then brought together accurately over this. Hegar's operation was then done on the posterior vaginal wall with a buried and superficial row of catgut which made a good support for the bladder. Fortunately the catgut was good and the tissues were healthy as that in both operations primary union was obtained. The result was all that could be desired; she could cough and turn in bed from the first day without wetting herself, and at the end of two weeks she could walk about with comfort and without a single drop of urine passing involuntarily.

(*To be continued.*)

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SOME POINTS IN THE MANAGEMENT AND TREATMENT OF DIPHTHERIA.

By J. E. HETT, M.B., Berlin, Ont.

Since experience is the best teacher and practical results better then theories, it is our purpose to bring before the minds of the medical fraternity a few points which speak for themselves. Until a comparatively recent date, the diagnosis and treatment of diphtheria belonged to the medieval times; for, indeed, there were very few advancements made in it, not only as regards treatment, but also as regards diagnosis. Since Bacteriology came into existence a new light was thrown upon the disease, and gradually one discovery followed the other until we may now claim that science has become the master.

We remember quite well that it was not more than ten years ago that many Bacteriologists claimed that cases, which were called diphtheria and recovered were not true cases of diphtheria, but a disease simulating it. They claimed that true diphtheria cases were invariably fatal. At the present time, however, science tells us a different story, for it holds out every encouragement and tells us that diphtheria can be easily checked, and there should not now be any doubts left about the specific treatment.

There is one important point I desire to bring forward concerning the diagnosis, and that is this: The only true method of making a diagnosis is by making a proper bacteriological examination of the membrane or secretions. Having had a great deal of diphtheria in our midst and having the able assistance of Dr. J. Mackenzie in carrying on the bacteriological examinations, every medical man was surprised with the results. We have seen cases in which extensive membranes had formed in the throat and which would have been pronounced diphtheria by nine men out of ten, yet, upon examination, turned out not to be diphtheria; and then, again, we have seen a small speck of inflammatory exudate not larger than a pin's head, which revealed the presence of the diphtheria bacillus.

In the commencement, when the system of bacteriological examinations was instituted, and the results of the examinations were so different to the diagnosis of the different medical men, there was, of course, a great deal of doubt and suspicion thrown upon the bacteriological examinations. After a careful study in a nnmber of cases I soon came to the conclusion that the examinations made by Dr. Mackenzie were true, and that it is impossible for any man to make a positive diagnosis in every case without the microscopical examination. If any practitioner thinks he can, all he needs to do is to carefully compare notes with the swabs sent to the analyst, and then he will find himself mistaken more often than he anticipated.

It is often a great surprise to the physician not aquainted with the examinations, to learn how long the Klebs-Lueffler bacillus remains in the throat after the patient is well. Very often he feels very timid when he has to make repeated calls and take swabs until the patient is declared free. This is the case especially when the friends of the patient are anxious to have their house declared free.

From October 1st, 1897, until November 23rd, 1898, there were 590 swabs sent to Toronto for examination. These were, however, not all from the town, but some also from the country. The results of the examinations were:

Diphtheria, 217; not diphtheria, 336; doubtful, 10; sterile, 5; no growths, 22. The work was carried out promptly and accurately. We feel very grateful to the Provincial Board of Health and to Dr. Mackenzie, in instituting the bacteriological examinations. Every municipality in which there is the existence of diphtheria, should avail themselves of the opportunity now at their disposal, and carry out the management of diphtheria upon a scientific method.

In localities where diphtheria is either epidemic or endemic a bacteriological examination should be made in all cases of sore throat in which there are any white spots or formations of membrane, The taking of a swab is exceedingly simple. A small pine stick is taken and a little absorbent cotton securely fastened to one end. This is brought into contact with the diseased area, and then introduced into a wide-mouthed bottle (2 to 4 ounces). The stick is then broken off, leaving one or two inches with the swab in the bottle. The bottle is then well corked and sent to the analyst. Physicians should be supplied with suitable bottles and cardboard mailing cases by the Boards of Health. The results of the examination are then wired. The length of time required before the examination is known varies from one to three days.

As soon as a case is suspected, it should be immediately isolated as well as possible, and when the result is known the house should be immediately placarded. In many cases, however, houses should be placarded before the results of the examination are known. Very little harm results if the reports would state otherwise. Far better it is to err on the safe side than the other. The public should be instructed in the importance of these steps. One week after the membrane has entirely disappeared, a swab should be taken again to ascertain whether any diphtheria germs are still present. If the report comes back "Diphtheria," another swab should be taken until it is pronounced "Clear."

Methods of Disinfection.

The old method of disinfection by burning sulphur is no good in comparison with the excellent method now at our disposal. During the past year we resorted entirely to the fumes of formaldehyde. We used the gas generator manufactured by the Sanitary Construction Company of New York, and it gave us the greatest satisfaction. Care should, however, be taken in its use for much depends upon how it is handled by the Sanitary Inspector. It is also essential that none but the best formaldehyde is used. Some preparations of formaldehyde are inferior, and will turn dark in the machine, consequently care should be taken as regards the quality.

The manner of disinfecting a room, briefly stated, is as follows: All windows, stove-pipe holes or other apertures are closed with some suitable material. All articles should be left in the room. The fumes will not injure any articles of furniture, silverware, wall paper, carpets, etc., but kills plants very quickly. Plants should consequently not be kept in the sick room at the very commencement. The patient should have all the clothing stripped off, a bath and clean clothing given. He may then occupy other quarters in the house. Through the key hole is inserted the glass rod, through which the gas is transmitted. The machine should then be run twenty minutes for every thousand cubic feet of air space. If the patient had been well isolated, then the disinfection of the one room may be all that is necessary. In many instances, however, a number of rooms or the whole house should be disinfected. It is a strange thing that the Klebs-Lueffler and other bacilli are readily killed by the gas, but it seems to have no effect upon bed bugs and

flies. After a house is disinfected the placard should still remain for one week longer, and during that time the patient should not be permitted to leave the premises. This might not be absolutely necessary if all the details of the disinfection are properly carried out, but still the benefit of any doubt should be maintained.

TREATMENT.

In a few words we might just as well dismiss all the old remedies which are used internally by saying that they are no good. From my own observations and experience I have no hesitancy in saying that the proper scientific method of treating diphtheria is by using antitoxin. It has been sufficiently demonstrated the world over that it is the true specific. A vast amount of literature has been brought before the profession concerning antitoxin during the past year, and it is remarkable to note the differences of opinion. Some men praise it while others still condemn it. This fact, however, should be borne in mind. *Antitoxin is a preventative and must be used in the commencement.* If it is administered when diphtheria has been a few days in progress, disappointment will surely follow. When the system is far advanced in a toxic state then antitoxin will not give the results which many hope. The men who condemn it are those who monkey around with other remedies first, then, as a last resort, use antitoxin. If the patient dies then antitoxin is no good.

Since very many mild cases and also severe ones recover without any treatment, it naturally follows that the physician is reluctant in using the specific. The cost of the remedy and the opposition of the laity have been great draw backs. These are, however, now pretty well removed since antitoxin is reasonable in price, whilst the specific mode of treatment has made rapid progress. From a careful study of numerous cases it came to pass that in those cases, in which antitoxin was used, the germs disappeared much more earlier than in the other cases. This being the case, and since severe cases follow at times a light form, the proper course to pursue would be to use antitoxin in every case. If that method of treatment is adopted and administered in the commencement of the illness there will be a less percentage in the death rate. My own statistics show that antitoxin has been used in over fifty cases. There were no deaths. These cases were not all seen in the commencement. In one of them laryngitis had been pretty well advanced and intubation was quickly resorted to. It is exceedingly unfortunate that in many instances the physician is not called until the disease is already well advanced. This is responsible for many deaths. It is of great importance to educate the public so that a physician is called in early. A great deal of good work has been done here by the Truant Officer, whose duty it is to enquire daily in the schools as to who are the absentees, and then to make visits to the houses and inquire into the reasons of their non-appearance. If sore throat was discovered the parents were requested to call in their physician. If they refused, a physician was sent to inquire into the case.

Since the examination of the swabs takes from one to three days much valuable time is often lost in waiting for an answer. It is unwise to wait too long before resorting to the injection. If the case is severe there should be no hesitancy in using it immediately. It is far better to err on the safe side, and although a case turns out afterwards not to be diphtheria antitoxin in 500 to 1,000 units does no harm. I made mistakes in three cases. In these there were extensive membranes in the throat, whilst the constitutional symptoms were very severe. No harm whatever resulted. Antitoxin has had a thorough trial in this vicinity for immunization. Not a single case came

under my observation, in which it had been used, that the disease afterwards manifested itself.

The specific treatment is also highly recommended in cases of laryngitis. Two much confidence, however, should not be laid upon it, for laryngitis does not come on until the disease is a few days in progress. If possible, intubation, as well as antitoxin, should be resorted to. The antitoxin which has been almost entirely used here was that manufactured by Parke, Davis & Company. The concentrated form in the hermetically sealed bulb renders its use almost as simple and expeditious as in giving a hypodermic of morphine.

Local Treatment.

In children that are old enough to gargle formaldehyde ℥i to ℥viii of water makes an excellent gargle. In younger children there seems nothing better than using the same lotion with an ordinary throat swab. In some children the lotion seems to be too irritating, and then it may be diluted as deemed expedient. Formaldehyde as a gargle is far superior to the old-fashioned iron gargle. In the same strength it may also be used with an atomizer, but the atomizer is not as efficient as the swab, though it is more agreeable.

Concerning paralysis there is very little to state. It is my belief that if cases are treated by the specific before there is extensive infiltration of the tissues in the throat, there will be very little or none. In cases, however, which are severe and the system well saturated with toxic poisons, then paralysis is likely to follow in some cases. It has been claimed by some writers that there is more paralysis if antitoxin is used ; but this has not been my experience. In fact, there has been very little of it.

The above points, as will be noted, are all based upon a practical experience. This being the case, and experience the best teacher, it naturally follows that some of the points may be of great importance to those who may be called upon to treat diphtheria.

THE HYDROPATHIC TREATMENT OF FEVERS.*

By A. K. Sturgeon, M.D., Petrolea, Ont.

Mr. President and Gentlemen,—The subject I have chosen for this paper is one in which every physician has had more or less practical experience with, almost in his every-day practice, and consequently will have some definite views upon the subject. Though the practice of hydrotherapy for therapeutical purposes is as old as the science of medicine itself, it was not until recent years that it has received so important a place in the treatment of fevers, whether it be the exanthemata, or micro-organisms, or non-infectious in type. In advocating hydrotherapy I do not exclude medicinal treatment necessary in such cases, but as a powerful medium by which we can reduce an abnormally high temperature, tiding the patient over a critical period of his or her illness, without the dangerous depressing effects of the

*Read at the Lambton Medical Association, Petrolea, Oct. 12th, 1898.

medicinal antipyretics so much in use at the present time, especially the coal tar derivatives. I do not intend to go into the various methods of administering water for remedial measures, which include many, from simple sponging, to the hot pack, but a knowledge of its physiological action, and to what extent it may be carried with safety, all should be able to determine. Physicians outside the region of hospitals are often defeated in their endeavors to carry out successfully the treatment owing to a want of trained nurses, and in some cases to a lack of knowledge upon the part of the attendant, to the technique of the operation, and its physiological effects upon the system. The first and most important point is in the precision and method of giving it, and this in properly selected cases. It would not be wise nor safe to put your patient, with an asthenic type of fever in a bath of 70 degrees, or heart failure might result, but in the sthenic forms the most gratifying results may be obtained. In all mild forms, temperature not above 102 degrees, simply sponging may be all that is necessary to keep the patient comfortable, but in those malignant forms, temperature 105 degrees, and an upward tendency, with delirium and great restlessness, the sheet bath, with its attendant friction, is an ideal remedy. The method of giving this is simple. Having bed prepared with rubber spread, a sheet is rung out of water at a temperature of 60 or 70 degrees. The patient lies up on this, while it is smoothly applied to the entire cutaneous surface. The sheet soon becomes warmer, then water from a sponge is poured upon limited portions beginning with the chest, while with the other hand constant friction is made until reaction sets in; thus successive parts are gone over, with the exception of the extremities, until the patient is uniformly cooled off or complains of feeling chilly. He is then removed to another bed and made comfortable. This bath may occupy fifteen or twenty minutes and repeated every hour or so if required. This bath has the happy effect of reducing the temperature, stopping the delirium, and producing a refreshing sleep. It stimulates the heart, deepens the inspiration, thus increasing oxygenation and dianresis and improving the general condition of patient. The rationale of this bath is, the superficial vessels are stimulated to contraction, but dilate again under the constant friction of the hand; being again filled with blood, the latter is cooled off by the constant application of water. Thus a constant abstraction of heat is obtained, which even feeble patients can endure with safety. In the asthenic cases, with a dusky color of skin, sluggish capillary circulation, indicating great heart weakness, here water at a much higher temperature is indicated. I would not think it safe to use water at a lower temperature than 85 degrees in these cases, and it to be used with general friction. You may have an internal temperature abnormally high while the extremities are cold and livid; here water at a temperature of 100 or 110 degrees is indicated, which will stimulate the circulation and increase the functional activity of the skin; perspiration ensues carrying with it the poisonous material of the system. In the exanthemata opinions differ, and as to the cold bath the responsibility is too great for the average physician to shoulder; however in scarlet fever, temperature 104 or 105 degrees, cloths rung out of iced water and applied to the large vessels of the throat (in the sthenic forms), will keep the fever below the danger point. In the asthenic forms I have used the hot pack, when patient seemed to be on the verge of dissolution, with success. This is given by wrapping patient in a blanket rung out of water at a temperature of about 110 degrees, several more are wrapped over this, and patient remains in it about one hour until free perspiration ensues, and by this means the poison is eliminated from the system, thus reducing the temperature and relieving the heart by overcoming arterial tension. In the

treatment of typhoid fever you are all sufficiently acquainted with the beneficial effects of sponging with cold water, but I think in many cases it is not carried out with that precision and regularity it requires. A treatment which has given us a reduction of mortality to about three per cent., from a disease which rated about forty per cent., deserves our earnest consideration. To Brand is due the credit of carrying this treatment to a successful issue. In all such fevers noted for a depression of the nervous centres, as evidenced by headache, delirium, general debility, the cold bath has been demonstrated as the most effective nerve stimulant. In this way it acts as an antipyretic, for if we can keep up the eliminative action of the organs of the body the toxines causing the fever will be carried away. It also acts by constantly abstracting heat from the circulation, as stated in the administration of the sheet bath. Then when we remember the important work the skin has to perform in health, being so extensively supplied by nerve and blood vessels, and containing thousands of pores to the square inch, making it one vast glandular excruting organ, we can readily understand the temperature effects that can be produced by the application of hot or cold water, if not alone, for the importance in its cleansing effect.

Reports of Societies

SIMCOE COUNTY MEDICAL ASSOCIATION.

The twentieth regular meeting of the above Association was held in the Council Chamber, Barrie, on October 27th, 1898, the President, Dr. John W. S. McCullough, in the chair. Members present were: Drs. McCarthy, Palling, Ross and Raikes, Barrie; McCullough, Alliston; Williams, Bracebridge; Hanly, Midland; McGreggor, Thornton; Dunn, Beeton; Evans, Stroud; and Clutton, Edgar. Dr. G. M. Aylesworth, Collingwood, being unavoidably absent sent his paper entitled, "The so-called dual action of drugs," to the Secretary for presentation. The Society thought it best to defer reading of Dr. Aylesworth's paper until next meeting when he could be present. Dr. Williams, Bracebridge, read a paper on "Acute inflammation of Bone and its Coverings." The paper was an able exposition of diagnosis and surgical treatment of acute bone inflammations. The author cited a number of cases in practice showing the great importance of early diagnosis and correct surgical treatment; also the great and speedy damage resulting when the disease had not been properly diagnosed or operation not thorough, or unnecessarily delayed. The paper embraced the histological structure of bone, the pathological features of and following inflammations simple and infective, the points of diagnosis and operations for cure. The paper was discussed by Drs. Palling, McCarthy, Hanly and Ross.

Dr. W. A. Ross, Barrie, presented notes on a case of appendicitis on which he had performed appendicetomy, and showed the removed appendix which was completely gangrenous in its distal two-thirds. The case was important in that the symptoms had not been severe, pulse and temperature having not indicated the severity of the condition; however, as the diagnosis was thought to be certain, and the pulse and temperature beginning to climb operation was determined on. At the operation a good deal of inflammatory infiltration was found in the peritoneum about the region of the appendix and the appendix itself to be more than two-thirds gangrenous. The usual operation was performed and patient made a good recovery. This case was an illustration of what might have been a fatal termination without operation, as with a gangrenous appendix and commencing peritonitis the patient's chances were slim.

Question of operation in appendicitis was discussed by Drs. McCullough, McCarthy and Williams, consensus of opinion being that where symptoms were severe and a capable operator at hand, operation was, beyond question, the treatment.

Question of Society nominating a candidate to represent district No. 9 in Medical Council, was brought before the meeting. Dr. Hanly, the present representative, addressed the meeting on medical Council matters.

On motion of Dr. Palling, seconded by Dr. Clutton, the nomination of Dr. John Hanly was made and carried as representative for ensuing term.

Several members addressed the meeting on Medical Council matters expressing opinions, (1) That the Medical Council should collect yearly fees from all practitioners alike; (2) That they should maintain suitable headquarters as befitting the profession; (3) That the homœpaths had too large a representation in the Medical

Council; (4) That defunct teaching bodies should have no representatives in the Medical Council.

Meeting adjourned until next regular meeting in February.

J. A. C. EVANS, Sec.

THE YUKON TERRITORY COUNCIL.

The Yukon Territory Council has met, presided over by Commissioner Ogilvie and with Colonel S. B. Steel and Hon. I. E Girouard in attendance. The drafting of the Yukon medical ordinance was the important business which necessitated their attention. It was passed and has become one of the first regulations going into effect. Among its provisions is the inauguration of a body corporate, entitled the College of Physicians and Surgeons of the Yukon Territory. All physicians duly qualified and licensed are members. All members of the college will be entitled to vote for five qualified physicians for a membership in the medical council.

All physicians and surgeons registered in Great Britain and Ireland, are not subject to an examination and are registered upon presentation of their papers.

The council shall admit upon the register any member of the College of Physicians and Surgeons of Manitoba, Ontario, Quebec and the Northwest Territories, upon producing satisfactory evidence of the same and of identification.

The council shall admit upon the register any person who shall produce from any recognized college or school of medicine and surgery a certificate or certificates that he has taken a four years' course of study or a diploma of qualification from such recognized college or school, provided also that the applicant shall furnish to the council satisfactory evidence of identification and pass before the members thereof, or such examination as may be appointed for the purpose, a satisfactory examination touching his fitness and capacity to practise as a physician and surgeon, and provided that every applicant for such examination shall pay to the registrar of the College of Physicians and Surgeons, the sum of $100 towards defraying the expenses of the examining board.

Hon. I. E. Girouard is the temporary clerk of election and will register the physicians qualified, who in turn will have a voting privilege in the selection of the five members for the medical council. The local doctors who have received permits from Dr. Lindsay, are qualified for membership in the college. There is considerable jumping about by the medical fraternity digging up license papers and parchments. When the list of qualified practitioners is determined an election will be held, and the five doctors receiving the highest votes will receive their election certificates as members of the medical council. The council will appoint an examining board before whom all physicians not licensed, will have to pass an examination successfully to be admitted on the register. Several slates are in the field, but some of the doctors are hanging back to learn what dark horses will be sprung on the fraternity at the last moment. Following is the official list of physicians, who have been admitted to membership in the College of Physicians and Surgeons, up to going to press:

Dr. McWm. Bourke, J. A. LaChappelle, R. R. McFarlane, Wm. E. Thompson, H. C. Norquay, A. F. Edwards, H. H. Hurdman, W. G. Hepworth, F. W. Elliott, Dr. Sterling, T. N. Rogers, T. W. Lambert, J. H. McArthur, Richardson, Barrett, Sutherland, Dunn, Good and William Catto.

Special Selections

THE TREATMENT OF TYPHOID FEVER.*

By SIDNEY PHILLIPS, M.D., Lond., F.R.C.P.
Senior Physician to the London Fever Hospital, Physician and Lecturer on Medicine to St. Mary's Hospital.

TYPHOID fever being an artificially produced disease, tends to vary with the conditions associated with its origin, and though such variations are slight individually and gradual in incidence, in their sum they suffice in time to produce a considerable variation in type from the original disease. Certainly there is considerable difference in the symptoms described fifty or even twenty-five years ago and those occurring to-day; the difference is marked in the lessened severity of the abdominal symptoms; the tongue is now often moist throughout the disease, instead of dry and baked; tympanites and diarrhœa are much less pronounced; probably also hæmorrhage and perforation are less common; tremors and dilatation of pupils are now uncommon; and instead of noisy, active delirium, the mind is often clear throughout even fatal cases. The typhoid state, with the patient sunk deep in bed, unable to move himself, and lying unconscious or semiconscious for days, is now quite exceptional. Nor is this a comparison merely between a grave and a slight case, for the mortality is not lessened. Nor is it the result of treatment, though this may produce some modifications. The difference is one of type, and is probably accounted for by the fact noted first by Vaillard and since by myself,[2] Goodal,[3] Moore, and others—that of late it is not very infrequent to find at *post-mortem* examination of typhoid cases that there is little or no ulceration of intestines. Such cases escape some of the dangers of enteric fever, and those therefore met with on the *post-mortem* table must represent many others with little or no ulceration of intestines that recover. The diminution in severity of abominal symptoms is not, therefore, inexplicable, but corresponds with a tendency to lessened ulceration of intestines. Relapses, too, appear much more frequent of late years; in 1862 Murchison computed they occurred in 3 per cent. of cases; in 1897, the occurred in 13 per cent. of Metropolitan Asylums Board cases.

If typhoid of twenty-five years ago so differed from typhoid to-day, it probably differed still more fifty years ago; and when conditions existed such as made typhus rife, the distinctive characters of typhoid may well have been affected by such influences in a manner to account for typhus and typhoid fever being regarded at the time as one and the same disease.

In the treatment of the disease, Jenner, in 1879, insisted it was necessary to be acquainted with the "epidemic constitution of the period," and it is not less necessary now to be acquainted with the prevailing type of the disease.

PREVENTIVE TREATMENT.

The proposals which have been made to produce immunity by inoculations of bacillus cultures have not yet, at any rate, come into general use, and at present the prevention of typhoid fever depends upon those sanitary measures by which the proportion of persons dying annually in London from typhoid has fallen from

*Read before the Harveian Society of London, November 3rd, 1898.

377 per million persons living in 1869 to 129 per million in 1897.

But the fatality of the disease once contracted has little altered. Murchison found that the mortality of patients in the London Fever Hospital during the ten years ending 1862 was 18.5 per cent.; the same figure was shown in the cases occurring in various large hospitals in Great Britain and abroad. All figures available at the present day show about the same mortality. Thus, the Registrar-General's annual returns since the Infectious Diseases Notification Act in 1889 show that from 1890 to 1897 the mortality still remained over 18 per cent. The chances of recovery, therefore, of a person contracting typhoid to-day are little or no better than they were fifty years ago, notwithstanding the advances in medical knowledge and improved nursing and hygienic conditions.

In the treatment of a disease it is important to know the relative frequency of the various dangers to life; *post-mortem* records and returns of complications during life do not make these known, but an approximate estimate of the frequency of deaths from causes in each of the following groups can be made.

1. Death from general causes: toxæmia, hyperpyrexia, pyrexia, heart failure, "asthenia."

2. Death from local lesions special to typhoid fever: perforation, hæmorrhage, etc.

3. Death from intercurrent affections, pneumonia, etc., due to the streptococcus and pneumococcus mainly.

Of the causes in Group 2, perforation is most common; it has been variously estimated as causing 5.7 (Hoelscher[4]) to 20 per cent. of the deaths (Murchison, Hare[5]). (Other writers' estimates were given in the paper.) Certainly perforation will be over rather than under-estimated if credited with twenty of each hundred deaths.

Hæmorrhage may be taken as causing ten of one hundred deaths, as an outside estimate. (The figures were given on which this estimate was based.)

Peritonitis, without perforation, accounts for 2.2 per cent. of deaths (Hoelscher). Other rare accidents, such as rupture of the mesenteric glands, of spleen, or gall bladder, can not together account for more than 2 per cent. of the deaths, and a liberal estimate cannot credit the causes in Group 2 with more than thirty-five of each hundred deaths.

The intercurrent affections in Group 3 are mainly pulmonary: pneumonia, bronchitis, etc. Nephritis, pericarditis, meningitis, are very rare causes, and this group is shown by statistics (which were given) not to account for more than ten of each hundred deaths.

The causes grouped as 2 and 3, therefore, do not together produce more than forty-five of each hundred deaths, and if we allow for them, say, 50 per cent., there is ample margin for error. The remaining fifty of each hundred deaths must be due to causes falling in the first group, and these may be separately discussed here, though often associated in the disease itself.

First, as to *toxæmia*. It is probably the more common cause of death, and the antiseptic treatment is based on the endeavor to lessen its dangers by destroying the toxins before absorption, and limiting the action of the micro-organisms in the alimentary canal.

The list of substances advocated for the antiseptic treatment is innumerable; for many the claim has been also made that they cut short the disease, but an "abortive" treatment of typhoid is not yet known. Many antiseptic substances have been experimentally proved to destroy the bacilli outside the body, for example, a one in five thousand solution of corrosive sublimate, and the principle of the antiseptic treatment is no doubt correct. Jenner used to give charcoal

long before the term "antiseptic treatment" was formulated, but it is bulky to take. Bichloride of mercury has been extensively used since it was advocated by Sir W. Broadbent[6] in 1894, and it appears to me to be the most useful antiseptic, often lessening the temperature and the toxic symptoms; it rarely causes diarrhœa, but is probably better abstained from if there be hæmorrhage.

It is of interest that Murchison condemned the use of mercury in typhoid as "always useless and injurious." This difference in experience is another evidence of the altered type of typhoid fever.

Salol is another antiseptic substance which is useful. I find it a useful practice to give a daily enema of disinfecting solution, especially when there is constipation.

Hyperpyrexia is very rare in typhoid fever. Of two hundred consecutive cases at St. Mary's Hospital it occurred only twice; the same percentage was found by Bryant in 608 cases collected from *Guy's Hospital Reports*[7]; Ord,[8] Osler, Fagge, and the statistics of the Metropolitan Asylums Board all show the rarity of its occurrence. But rare as it is in typhoid fever, it is infinitely rarer as a complication in itself; it is [illegible] always due to some local affection. In one of my cases pneumonia, in two perforation and peritonitis, in one suppurative meningitis, and in one rupture of the gall bladder were found *post mortem*. It should, then, never be assumed that hyperpyrexia is a complication in itself without a thorough search for some local affection to account for it. This may be of import in treatment, as the cold bath, which is the sole efficient means of treating hyperpyrexia, might do harm if it were due to perforation or peritonitis; in such cases treatment must be directed to the local condition and the temperature meanwhile lowered by sponging, quinine, etc.

Pyrexia is not now regarded as one of the chief dangers of enteric fever, and too much importance is not to be attached to the mere temperature. A pyrexia of 103° for two or three weeks in a previously healthy young adult lying in bed and taking food well will not produce serious consequences. Even high temperatures are more often an indication of some intercurrent affection than a danger in themselves, and severe cases may not have a high temperature. Dreschfeld[9] and others record cases even fatal with no rise of temperature. The pyrexia usual in typhoid is for the most part effectively treated by tepid or cold sponging and quinine. When, however, the temperature is unusually high or unduly protracted, or with very irregular extensive rises and falls, or presents no remissions, other means must be adopted for its control, and of these there is none so effective as the cold bath. The claim made for it that it reduces the mortality from 17 or 18 to 8 or 9 per cent. has not been disproved. It is recommended that whenever the temperature reaches 102.2° the cold bath shall be employed; practically, therefore, all patients have to be so treated, which means that the eighty-two who would recover even without the bath and the nine who will die with or without the bath, that is, ninety-one of every 100 patients are subjected to repeated bathings unnecessarily, and that the nine who die, have these repeated bathings added to their sufferings. Its infrequent use, therefore, in hospital, and still more in private, practice is due not so much to a doubt of its virtue as to its impracticability, and it is not likely to become of general utility unless some means can be found of selecting the cases which really require it. It is said that to obtain the advantages of the treatment it must be begun too early in the disease to predict if the case will prove a serious one. So far as hæmorrhage and perforation are concerned this is no doubt true, but these are accidents which are not rendered less

frequent by the cold bath, and *quoad* the treatment may be ignored.

The only causes of death which are reduced by the cold-bath treatment are those in Group 1, and it must be admitted that it is not always possible to tell early in the disease whether such dangers threaten, but if the temperature is not very high, is accompanied by remissions, is not very irregular in its rises and falls, if the pulse is not very rapid or feeble, and if the patient does not seem greatly affected by toxæmia, I think he might be spared the cold bath for a time at any rate. For it is not certain that the advantages of the bath are lost if deferred after the temperature touches 102.2°, Hare having obtained equally good results without following this rule.

Possibly, if a selection were thus made, the statistics of the cold-bath treatment would appear less favorable than when all the slight cases are submitted to the treatment, but I believe it would be more generally used, and more lives would be saved, than by adhering to a criterion of danger based on the discarded theory that pyrexia is the one danger of fevers.

Probably the temperature of the bath need not be so low as sometimes recommended; thus Hare's baths were usually at 75° or 80°, owing to that being the natural temperature of the water in Brisbane, and he obtained as good results as others have done, though it should be said in severe pyrexial cases he cooled the bath down by ice. In Dr. Barrs' tank treatment[10] the temperature of the water is only 90° or 95°; this method, he finds, gives excellent results, but the special arrangements it requires are not to be obtained in a private dwelling. In patients not treated by baths it is generally agreed sponging with tepid or cold water, affusions, and wet packs are better than the use of drugs. The best of the drugs is quinine, but it is slow in acting; acetanilide, antipyrin, and phenacetin are depressants, and act on the red corpuscles; this is denied in the case of antifebrin.[11] I never use these drugs in typhoid, but I have seen them do much harm in cases of fever at all approaching a malignant type.

Cardiac Failure.—Changes in the myocardium resulting from pyrexia and from toxins are recognized causes of cardiac failure in typhoid; they are not, however, of great frequency in the disease. Hoelscher only found advanced parenchymatous change in 19 per cent. in two thousand necropsies of typhoid cases; it is indicated during life by the feebleness of cardiac impulse and sounds, and of the pulse; death may occur suddenly or gradually.

Sudden death sometimes occurs in typhoid in which no cardiac changes are found in the heart *post mortem*. Many explanations of these cases have been offered. Dewèvre,[12] though taking for granted such cases do result from cardiac failure, shows that none of the suggested explanations are satisfactory. These deaths appear of the same nature as deaths from diphtheritic paralysis, probably from peripheral nerve changes which are known to occur in typhoid.

Blood Failure. Another class of deaths, due to failure of circulation, merit attention. These are cases without any distinctive signs during the acute stage of the fever, though there is often a tendency to diarrhœa and sweating, and sometimes melæna. But when the end of the third week arrives, and convalescence is expected, the temperature though it falls to 100°, or thereabouts, keeps daily above the normal—100° to 101° or so; the pulse may get rapid, rising 140 to 160 a minute, and though the tongue is clean, food well taken, and the special signs of typhoid fever have passed off, the patient fails to gain ground; he gets daily weaker and more and more listless, though the mental state is usually clear; profuse sweats may occur, and the vessels are

wanting in tone; later on much tremor occurs from debility, and the patient usually dies, sometimes quite suddenly, sometimes merely flickers out. In other cases he may, perhaps, recover. Several such cases have been under my care. The symptoms differ from those usually attributed to toxæmia; and they cannot be attributed to heart failure.

1. Because myocardial change to such a degree as to lead to complete cardiac failure and death does not occur after a moderate fever of two or three weeks' duration, even in rheumatic fever in which myocardial changes are specially marked.

2. Because the symptoms differ from those of cardiac failure; a failing heart tends to become slower, but in these cases the pulse often gets more and more rapid; the heart sounds and impulse, too, are not greatly weakened, though as the debility of the patient increases their debility increases with it; the extreme listlessness and debility of the patient are quite out of proportion to the heart weakness

It appears most probable that in these cases there is an actual want of blood in the body, arising from failure in the blood-making function, and that death occurs from mere bloodlessness; I do not use the term anæmia, which would be strictly applicable, because it has become customary to use that term as applying only to the corpuscles.

The proof that symptoms in typhoid are sometimes attributable to want of blood are:

1. If the artery of a patient dead of typhoid fever after these symptoms be opened it will be found singularly empty of blood. In one case (where no melæna had occurred) it was quite empty and the inner wall of the artery quite dry. In some necropsies of typhoid patients, too, even where no melæna has occurred, the intestines are markedly blanched and exsanguined and the solid viscera pale and dry, though in most cases they are, as usual in febrile conditions, dark and softened.

2. Examination of the blood itself. Much less attention has been devoted to changes in the plasma and volume of the blood than to the changes in the corpuscles. Observers agree that there is an enormous decrease in the number of red corpuscles and in hæmoglobin throughout the course of typhoid fever which should be gradually made good in convalescence. There is also a great decrease in leucocytes, and Coe has found that the fibrin of the blood is diminished in typhoid fever, the exact contrary of what occurs in other fevers. Hayem, too, finds that in typhoid fever there are sudden rises in the number of corpuscles which he can only attribute to losses of fluid by sweating and diarrhœa. All these results go to show that grave deterioration in all the constituents and in the quantity of the blood occurs in typhoid fever. Further, Dr. Thayer and others describe cases of post-typhoid anæmia, sometimes fatal, coming on as the typhoid passes off; it is admissible to think that if such fatal anæmia can immediately follow convalescence, it may occur at a time when convalescence commences, and prevent its accomplishment.

3. The symptoms of rapid pulse, increasing listlessness and debility, with fever and perfectly clear mental condition, are just those which follow want of blood, and indeed they often come on after severe hæmorrhage in typhoid, and after hæmorrhages from other causes.

And if it be conceded, as I think it must, that many of the symptoms and dangers of typhoid are due to changes in the constitution and amount of blood in the body, there is no lack of causes in typhoid fever to produce blood deterioration. To the causes of blood deficiency, pyrexia, toxins in the blood, and cloudy swelling of the internal organs which are common to the fevers generally, there are added in typhoid a special affec-

tion of the great blood-making organ, the spleen, and very often, also, a drain of material from diarrhœa, hæmorrhage, or profuse sweats. In addition, the widespread affection of the mesentric and retroperitoneal glands must offer an obstruction to the absorption of nutriment from the alimentary canal, however well it is taken and digested. And I think the conclusion is justified that a certain number of typhoid patients die from mere bloodlessness and failure to make good the loss of blood material which results from the disease.

Why some patients should pass into this state and others not appears to depend more on the individual incapacity to make good the depletion by a new formation of blood than on any special character of the typhoid poison. Doubtless this defect in blood formation is in some cases associated with real cardiac weakness, but the cardiac weakness in many such cases is a result of it and not the cause. And the importance of measures to keep up the blood supply cannot be overestimated.

Another condition also seems not uncommon in typhoid fever—namely, a tendency for the venous side of the circulation to be full of blood while the arteries are unduly empty; in opening veins for injection of salines I have often been struck with the free bleeding from both proximal and distal ends of the vein, and care must be taken, if it is wished to avoid this, to put a ligature round the vein before it is opened, tightening it round the vein and cannula after the latter is inserted. Hayem has found, in examining the blood of typhoid patients, that changes which he attributes to loss of fluid by sweats and diarrhœa, occur in it suddenly, "such as seen in the algide stage of cholera," in which disease there is a tendency to accumulation of blood in the veins; and I think the overloading of the venous side in some typhoid (and other fever cases,) is worthy of note, and among other things may predispose to thrombosis.

As regards treatment, it will be convenient to speak of heart failure asthenia, and blood failure together. For all of them one essential is to prevent waste of material by diarrhœa or hæmorrhage, or profuse sweats, and to supply as much nourishment as can be digested and absorbed.

As regards food, Dr. Barrs[13] recommends the giving of solid food whenever the patient "likes it, wishes for it, and enjoys it." He argues that such food will not be likely to cause perforation, as it becomes softened before getting into the intestine, and that perforation only occurs in 2 or 3 per cent. of cases. I think cases do occur with little or no intestinal ulceration in which solid food might be given early without ill effect, but in the absence of certain means of distinguishing such cases, and remembering unfortunate results which have occurred in some patients who have surreptitiously followed Dr. Barrs' treatment, I think liquid food is the only justifiable mode of nourishment in the active stage of typhoid fever. And of all foods milk should be the staple diet, diluted with water, lime-water, or barley water, according to the wish of the patient and the discretion of the medical attendant. Where milk so diluted fails it will be sometimes better taken peptonised; in some cases it is borne well when diluted with tea, and there seems no reason to deny a typhoid patient either tea or coffee. We give caffeine for the heart, tannin to check diarrhœa, and allow sugar and water to be taken; why should a mixture of these be disallowed?

In some cases of vomiting or diarrhœa, beef-tea or meat extracts have to be substituted for milk. The quantity of milk given should be as much as the patient can digest without flatulence or colicky pain or curds in the stools. As a rule three pints is enough in the twenty-four hours, but I can see no reason why more should not be given if the patient can take it well; persons often take five or six pints of milk a day under the

Weir-Mitchell treatment, and a patient wasting and losing blood rapidly, as in typhoid, will benefit by as much as he can take without digestive disturbance. As regards stimulants, I have nothing to add to the rules usually followed; they are not necessary as a routine part of treatment.

An important point is to secure sleep, and opium is quite admissible. Sir W. Broadbent deprecates the use of chloral. In the treatment specially directed to cardiac weakness digitalis, strychnine, and caffeine are to be resorted to, but cardiac tonics receive little response from a heart with organically-weakened muscle tissues; caffeine and strychnine act well together, but strychnine here, as in other conditions, may easily be pushed so far as to make the patient wakeful. Ether, ammonia, and sumbul, and diffusible stimulants are often of use. Alcohol, no doubt, stimulates the heart, but if pressed too much has the contrary effect.

In all cases, and specially in some, endeavors should be made to keep up the volume and composition of the blood; sweats should be checked by belladonna or oxide of zinc or agaric acid, and diarrhœa by enemas. There is no reason why cold water should not be given freely, due regard being had to preventing abdominal distension. In many cases ice sponging or the cold bath contracts the vessels and lessens their relaxation for some time after its use, and possibly in the bath or the tank fluid is actually absorbed cutaneously. Raw meat juice and every form of nutriment possible must be given in cases of gradual weakness from blood deterioration, and I have sometimes given iron and malt extract. Oxygen inhalations are also of use. Solid food must be given as soon as it can be taken with safety; after three days without fever at any time in the twenty-four hours it may be given; it is best to intermit one day at first to ascertain if a rise of temperature is produced. In cases where it is deemed probable that little ulceration occurred I give solid food earlier than in other cases. When cases drag on with little rises above the normal, solid food must be tentatively and gradually tried. In convalescence patients are hungry and require feeding up, and it is often in cases where solid food is long delayed that thrombosed veins occur.

When there are evidences of profound bloodlessness and weakness, whether following hæmorrhage or not, saline injections may be of use. Personally I have found the subcutaneous injection of salines gives so much pain that I prefer injecting the saline fluid into the basilic vein. This flows in better with a simple cannula, drainage tube and funnel than pumped in by the double action syringe made for the purpose. I have injected two pints, usually at a temperature of from 100° to 115°. After it there is usually sweating and rise of temperature temporarily. I believe the fluid should not be injected at so high a temperature as 105° in typhoid fever. In two cases I think the patients' recovery was due to it. In one of them, in 1896, the patient was in an apparently hopeless state of collapse, but recovered after two saline injections. Probably blood transfusion would be better, for in most cases saline injections only give temporary benefit.

Perforation may be accompanied by its well-known symptoms, but in some cases of typhoid where nerve tone is already lost, and the tympanitic belly is soft and doughy, perforation and after-peritonitis may occur most insidiously, with little pain, collapse signs, or alterations in temperature.

Cases of recorded recovery from perforation based merely on evidence of symptoms cannot be taken as conclusive, for it may be simulated by rupture of peritoneum over a mesenteric gland and other causes; indeed the abdomen has been opened for

perforation in several cases where it had not occurred. In Herringham's case[14] nothing was found and the patient recovered; in Sheild's case[15] rupture of gall bladder. In a case, however, recorded by Murchison, a perforation had all but healed when erysipelas carried off the patient, and in a case at St. Mary's Hospital in 1894, a *post-mortem* examination showed a perforation all but healed when the patient succumbed to septicæmia. Three cases of twenty-two recorded operations for perforated typhoid ulcers have recovered, and as operation affords a better chance of recovery than that offered by Nature, it appears to me indicated in all cases in which perforation can be diagnosed —the difficulty in the diagnosis, however, will prevent the operation being very often performed. The only other treatment affording a chance of recovery is opium.

Hæmorrhage.—Some have regarded hæmorrhage as a favorable occurrence in typhoid fever, and there is no amount of hæmorrhage that may not be recovered from; in 1882 I saw, with Dr. Wakefield, a patient who bled two chambers full, and recovered. But the more general opinion is that it is a bad omen, and that death follows 30 or 40 per cent. of cases of free hæmorrhage, though sometimes long after the bleeding has occurred. It is generally arterial but in a case of mine in 1888 the necropsy showed that the dark blood had oozed away during life from a vein in the ileum, opened up by ulceration. In its treatment opium pressed freely, and turpentine, are useful, but often no drug is so efficacious as tincture of hamamelis; in one case at St. Mary's Hospital in 1892 (J. M., Case 1398) it checked the hæmorrhage after all other remedies had failed, and I believe it is more to be relied upon than anything else; in 5-minim doses in a little water every half-hour while the hæmorrhage lasts, with or without opium. The application of the ice-bag to the abdomen seems beneficial, but it is depressing if kept on long after the hæmorrhage has ceased and it freezes the abdominal wall into a leathery consistence, and probably interferes with the vitality of the subjacent intestine. I have repeatedly seen hæmorrhage occur while the ice-bag had been on for days. The necessity for absolute non-movement of the patient when hæmorrhage occurs is obvious.

Of peritonitis without perforation opium is indicated.

Diarrhœa.—Murchison in the edition of his work in 1862 wrote that diarrhœa occurred in 96 of 100 cases; in 1884 he found it reduced to 80 of 100 cases; since that time it is much less frequent. Of 200 consecutive cases at St. Mary's diarrhœa occurred in only 115; constipation in 48; and the diarrhœa was seldom very severe. In many cases it had been set up by a purge given before a diagnosis was made. Diarrhœa is found in a very large proportion of cases in whom hæmorrhage occurs, and in my opinion adds to the danger of typhoid fever by preventing absorption of nutriment and by draining the blood of fluid. I think purgative drugs should never be given and diarrhœa should be checked in every way possible by adapting the nature and quantity of food to the patient's powers, by giving all food warmed and by enemas of starch with or without opium rather than by drugs given by the mouth. Of the latter, salicylate of bismuth in doses of 20 or 30 gr. doses three or four times a day is very useful.

Constipation must be treated if obstinate; enemas are better than purgative drugs for this purpose, and should have some disinfectant added to them. It is very important to overcome constipation before solid food is given; if not, it often sends up the temperature and an immediate recurrence of symptoms. Some attribute relapses to the giving of solid food, others to constipation. Cer-

tainly the two combined will produce a rise of temperature and disturbance for a considerable time, though not, I think, a true relapse with fresh spots.

Tympanites is commonest when there is much diarrhœa. That form in which the belly is soft and doughy as well as swelled is due to general loss of nerve tone, and treatment affects it little. Diffusible stimulants, etc., may be tried. In the form of tympanites with tense abdomen, hot fomentations are, I think, preferable to the ice-bag. Passage of a long tube into the rectum gives relief and often also sets up retention of urine.

In many cases swelling of abdomen is due not to true tympanites but to stomach distension, the result of liquid food and the recumbent position. Food must be given in small quantities only.

Retention of urine must be always remembered—it is often overlooked in the general distension of abdomen, or because "overflow" occurs from the full bladder. Long retention may add uræmic dangers in a typhoid patient very readily.

The question of moving a patient in cases where the sanitary conditions are bad has sometimes to be considered, for he will be likely if he remain where he is to take in fresh doses of the poison. On the other hand, as Sir W. Jenner pointed out, the cases that do worst owe it sometimes to having travelled when well on in the disease. If it is very early, careful removal will be best. If the patient is well on in the disease he had better remain where he is as the risk of moving is too great. I show the chart of a patient I saw in June with Dr. Pettifer who had repeated rigors and rise of temperature pointing to septic conditions. We moved him; only one more rigor occurred and he recovered

In the third group the intercurrent affections of typhoid such as pneumonia are to be treated on ordinary principles; pneumonia is usually recovered from, and it is apt to begin or end in the course of typhoid with abrupt rises of temperature or a critical fall, after which the typhoid temperature reasserts itself. Acute bronchitis in typhoid is, in my experience, more serious than pneumonia.

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SOME RECENT IMPROVEMENTS IN ASEPTIC TECHNIQUE.

In the sixty-seventh volume of the *Archives of Clinical Surgery*, second half, are found some able papers upon asepsis, the most important, thorough and immediately practical being that of Mikulicz, who after a brief review of the changes in method which have taken place since the time of Lister, and some words of commendation of the aseptic method as elaborated by Bergmann and made more or less practicable by the ingenious devices of Schimmelbusch, advances the opinion that the results, so far as the assurance of healing of all wounds is concerned, are yet so unsatisfactory as to render imperative careful attention to the minutest details of operative preparation, and a painstaking revision of them for the purpose of abolishing sources of infection commonly unrecognized or neglected.

As to the absolute sterilization of dressing material, this, of course, can be accomplished by heating. There is, however, no generally adopted method by which the surgeon can know with absolute certainty that the

dressing which is handed to him has been subjected to a sufficient degree of heat to accomplish such sterilization. In a well managed clinic errors on this point are not likely to occur. Still, it is always possible that they may As a means of enabling the surgeon to be positive on this point Mikulicz suggests the following: A strip of unsized paper is marked with the word "sterilize" and is then painted over with a three-per-cent. starch paste. When half dry it is again painted with a potassium iodide solution, made by adding one part of iodine and two parts of potassium iodide to one hundred parts of water. The strip at once becomes of such a dark blue color that the writing is completely concealed. In hot steam this dark blue color disappears, or at least to an extent sufficient to enable the writing to become distinct. Dry heat will not accomplish this result. Under pressure in an apparatus in which the steam is raised to a temperature of 106° C. the strips which are hanging free are decolorized in ten minutes; those which are placed in the middle of a dressing not for twenty minutes or over. If the temperature is less than 100° C., more than an hour is required for the decolorization. The strip of paper thus prepared and placed in the centre of a dressing proves positively that the dressing has been subjected to hot steam and not hot air, that the steam has been sufficiently hot for thorough sterilization, and that it has operated for a sufficient length of time. Experimental research has shown that even the most resistant bacteria are destroyed before decolorization of paper thus prepared.

As to the sterilization of sutures and ligatures, the present methods are absolutely satisfactory. The main points to be considered at present are as to the advisability of impregnating catgut with some material such as iodoform which inhibits germ growth, and the choice of a method of sterilization which renders the gut strong and easy to handle. Mikulicz prefers the Hoffmeister catgut, and states that he is in every respect content with it, that he never noted suppuration which could be traced to its use. It should be noted that according to Poppert, both catgut and buried silk sutures may occasion sterile suppuration. Hoffmeister's method is described by Vinberg (*American Gynecological and Obstetrical Journal*, June, 1897) as follows:

The gut is first immersed in a solution of formalin of from two to four per cent. according to the size, and allowed to remain in this solution for a period of from twelve to forty-eight hours. The formalin is then removed by washing in running water for twelve hours. It is then boiled in water for fifteen minutes, after which it is transferred to a vessel containing alcohol, where it may be kept until required for use. Carbolic acid in the proportion of two to four per cent. is added to the alcohol and makes the gut more firm, but it should be removed to plain alcohol some time before using. The secret of success in this method of preparation is to keep the gut in a high state of tension until after it has been boiled. Hoffmeister recommends that the gut be rolled tightly on glass; and Lange, of New York, has devised a small steel frame for this purpose.

The instruments are satisfactorily prepared by boiling in soda solution.

Infection, difficult or sometimes impossible to avoid, may arise from three other sources, namely, the air, the skin of the operative area, or the hands of the surgeon or his assistants.

The importance of air infection, at first greatly exaggerated, has latterly been too much neglected. It is true that the bacterial forms found in the air are most of them non-pathogenic and are of minor importance, excepting in and about hospitals where there may be large numbers of pathogenic micro-organisms floating about. This is particularly true of large lecture halls, where the ratio is mark-

edly increased by the coming and going either of the students or assistants. In small operative rooms the ordinary methods of cleaning and preparing are practically efficient, but to prevent the bringing in of bacteria by outsiders it is requisite that each should be covered with a perfectly clean mantle, and, a matter of greater importance, that each should put on rubber shoes, which have been previously cleansed and placed on a surface moist with sublimate. This is especially important in the case of medical students coming as they do from the dissecting rooms, pathological departments, and hospital wards, and bringing in on their shoes enormous numbers of virulent bacteria.

A much more important source of infection than that from the air of a room is that from the mouths of the operator and his assistants. It is sufficiently proven that in the mouths of perfectly healthy people pathogenic bacteria are found and these bacteria are virulent. Of forty-eight healthy persons examined, in one-third were found virulent yellow pus staphylococci. In the mouths of those suffering from ordinary sore throat, streptococci were found thirty times in forty investigations; staphylococci seventeen times. The majority of these micro-organisms were virulent. It is noteworthy that not only are the number and variety of the mouth organisms markedly increased by slight pathogenic processes such as sore throat, but also their virulence is greatly augmented.

In ordinary talking these bacteria are carried from the mouth in sufficient quantities to produce infection, whilst in clearing the throat, coughing, or sneezing, they are projected for the same distance in enormous quantities. Hence it is evident that some means must be taken to prevent these bacteria reaching the open surface of a wound, and this is particularly important when the surgeon has any inflammatory condition of his mouth or nostrils.

Thus protection is afforded by a double layer of gauze bound about the mouth and nose, or better, by a mask in the form of a chloroform mask, so fastened that breathing is easy. Investigation has shown that such a mask absolutely prevents the escape of bacteria while the surgeon is breathing ordinarily or talking, but that in clearing the throat or coughing it does not provide an absolute protection, whilst in sneezing the protective worth of the mask is extremely slight. Mikulicz has used such a mask for six months and states that he is so accustomed to it as to wear it without inconvenience.

Thus, by thorough previous cleansing of a room which has been specially devised for operations, by clothing all who come in and go out of that room with sterilized garments and putting on them rubber shoes, and by placing on the surgeon and his assistants gauze masks which prevent infection from the mouth, the possibility of infection from the air is reduced to a minimum.

The disinfection of the skin covering the wound area is a more difficult matter. It is proven beyond controversy that none of the disinfection methods are able to destroy the germs lying in the deeper layers of the skin. Alcohol and sublimate are somewhat more potent than carbolic acid and sublimate, but both fail in about fifty per cent. of cases. The important point, so far as infection of the wound is concerned, is, however, superficial disinfection. This is best accomplished by the thorough use of soap and water before the employment of alcohol and bichloride. Because of the impossibility of sterilizing the deeper layers of the skin it is important to keep the superficial layers protected so that they may not be rubbed off and thus expose the hands of the surgeon, the compresses and the instruments to infection. If the skin is affected with eczema or acne, or has developed in its substance pustules, operation should be postponed

if possible. If not, Mikulicz first cuts through the skin and superficial fascia, then secures by means of long sharp tooth forceps a slit compress to the edge of the wound, not including the skin.

Although the stitching of healthy skin but slightly endangers infection of the wound during operation, it may occasion infection during healing by the medium of the stitch canal. Many stitch abscesses are caused by bacteria lying in the deeper parts of the epidermis. When the stitches are deep the infection may thus be carried to the depth of the wound. The danger of these abscesses is lessened by using very fine suture material and by not placing tension upon the stitches. Where tension sutures are required they should always be buried beneath the skin and a fine, loose, accurate running stitch should be used for superficial closure. Examination of the stitches removed at the time of the first dressing, usually in from four to eleven days, showed that very few were entirely sterile. Staphylococcus albus was usually present; in about twenty per cent. of the cases it was combined with the aureus. In the secretion of a few stitch abscesses no microorganisms were found, and there were many cases of primary healing in which both the albus and aureus were found in the silk removed. There was one case of severe infection caused by the albus.

Drainage distinctly increases the danger of infection from the skin, and this danger can only be avoided by doing without draining. Since the bacteria of the deeper skin layers cannot be destroyed, Mikulicz advises the impregnation of suture material with an inhibiting agent, preferring for this purpose iodoform. Immediately before the operation he lightly paints the skin of the operative area with a tincture of iodine, holding that this agent exerts a protracted inhibiting force upon the skin bacteria, and finally, after closure of the wound, he covers it with zinc paste, thus preventing entrance of bacteria from without.

The sterilization of the hands is the most difficult problem of all. The most thorough and elaborate procedures have proven inefficient. Moreover, investigations show that individuals vary greatly as to their ability to cleanse their hands, some with apparent ease and in a short time approaching a degree of sterility which others seem quite incapable of reaching after prolonged efforts, and this to a certain extent was independent of the previous degree of infection of the hands, though it was noteworthy that in those who had to do with the operating upon and dressing of septic cases virulent pathogenic germs were always found.

Although it is true that in perhaps a large percentage of cases before the operation the hands may be superficially freed of germs, this does not last long. During the course of the operation the germs which lie in the deeper skin layers reach the surface in increasing numbers. Thus it follows that the danger of infection of a wound from the hands is greater in proportion to the length of the operation, and hence some form of sterile covering to the hands is indicated. This protection is provided by sterile gloves, but not completely. Experimental research has shown that during the course of an operation the germs from the skin of the hand will pass through these gloves. None the less, the percentage of successes in surgery was markedly increased in Mikulicz's practise by the use of gloves, having risen from eighty-three to ninety-four per cent. He holds that generally the wound is infected by the finger points and the nails. To lessen the danger from these sources he paints around the nails and beneath them pure tincture of iodine, then dips the finger ends in the same solution. After that he washes his hands in lysol and then puts on his gloves. This application does no

harm to the fingers. In long operations the gloves should be frequently changed. This is especially true in operations in which they become soaked with blood.

As a rule wounds should be closed without drainage, or there will result in about ten per cent. of the cases hematomata, which either have to be aspirated or are absorbed very slowly. If this formation is likely to occur, drainage should be continued for twenty-four hours; cases of thyroid extirpation are always drained for this length of time by Mikulicz.—*Therapeutic Gazette.*

SURGICAL SHOCK.

In the *Memphis Lancet* for July, Estes tells us that the recognition of the essential anæmia of the brain as the constant pathological factor in shock gives the key to the treatment. The endeavor should be primarily to restore the blood of the brain. As this cerebral condition in psychical shock and in concussion has been produced by the inhibitory action through the pneumogastric by a violent irritation of the medulla, the vasomotor system must of necessity also be violently affected, as the medulla is the centre of the vasomotor nerves. After lowering the head and placing the person in a recumbent position to obtain at least a small quantity of blood for the brain, the next indication will be to excite the action of the sympathetic nerves in order to restore the tone to the heart. Of course, the elementary procedures of loosening the clothing, especially about the neck and waist, and taking care to supply fresh air, must always be observed. Sometimes a quick, violent action of the diaphragm will assist in stirring up the splanchnic and the direct cardiac sympathetic filaments. Hence irritation of the nostrils in order to produce deep respirations or sneezing will do good. Hare recommends an abdominal compress for chloroform poisoning. Direct cardiac stimulants (rarely digitalis), at the head of which stands strychnine, are indicated. Heat to the surface should be applied in order to relax the cutaneous vessels, and friction to the extremities for the same purpose.

Of the greatest importance in cases of psychical shock is it to remove the person from the place or locality which may have excited the dangerous mental condition before he recovers consciousness, else a relapse may occur. In cases of serious injuries it is of the greatest importance to take proper measures to prevent and to control the hæmorrhage during psychical shock, for very little bleeding will occur until this condition is passed. As almost complete anæsthesia exists, an Esmarch tourniquet may be applied, vessels tied, or sutures put in without any disturbance or harm to the patient. In this condition, as soon as consciousness begins to return and so-called reaction begins, an anæsthetic, if given, will hasten the reaction and thereby restore somewhat the tone and quality of the pulse. The author thinks these cases have given rise to the contradictory observations of various surgeons who report that in their experience an anæsthetic frequently improves the strength of the pulse, hence they recommend undertaking an operation "before the patient reacts from shock." This is a very unsafe recommendation, because if the second stage, acute anæmia, has already taken place, any operation which involves the further loss of blood is very apt to be fatal. The safer rule is always to wait with any operative procedure which must be attended with even a small loss of blood.

The treatment of acute anæmia is the same as the foregoing, with the full appreciation, however, that this condition is in these cases from an absolute as well as functional loss of blood. Energetic measures must therefore be taken to restore some

blood to the brain. The limbs should be tightly bandaged from the extremities upward to drive the blood out of them to the head, the head and shoulders lowered, heat applied externally, and large doses of strychnine hypodermically should be employed. The author has used as much as 0.025 (½ grain) of the sulphate of strychnine in the course of an hour in these cases, and about 0.1 (1½ grains) in twenty-four hours. Caffeine in the form of best black coffee, digitalis, and the aromatic spirits of ammonia he frequently uses. Alcohol, he thinks, does harm rather than good; in late years he has not used it for shock.

Besides the above remedies, a most important indication is to restore fluid to the empty capillaries and veins. Many surgeons use habitually intravenous injections of a normal saline solution, and formerly the author also used it; he was, however, so frequently disappointed in its ultimate action that he has not used this method for some time. He has found far better rectal injections of this hot saline solution. Now it is always a part of his routine practise in cases of shock to use large or frequent rectal injections of this solution. If the patient is in profound shock the quantity injected may be large—as much as two liters—care being taken to use a soft rectal tube and pass it up to the sigmoid flexure, while the patient has his buttocks raised, and then allow the fluid to flow from a douche can or fountain syringe into the colon. In cases of partial or complete consciousness he uses half a liter of the solution, always injected by gravity alone into the rectum, and repeat it in an hour. The transit through the intestinal walls into the blood-vessels is slower, but in his hands much more efficient than intravenous injections.

As soon as the stomach will retain it, as much water as the patient can take should be given by the mouth. A generous fluid diet of a nitrogenous kind should be allowed for twenty-four or forty-eight hours, and then light but frequent feeding of a more solid kind. He thinks major operations should never be attempted, if they can possibly be postponed, during shock. He believes the very good results he has had in cases of extensive acute injuries are due largely to the fact that he has waited until the patient has had time to recuperate somewhat from his acute anæmia before operating. In the cases requiring hip-joint amputations for injuries he waited thirty, forty, and about forty-two hours respectively before operating.

In conclusion, the author begs the readers of his paper will not lose sight of its main purpose, through the distraction of possible differences as to the theories advanced. He has tried to prove that shock which kills is a condition of acute anæmia; that this operates through the brain, as an anæmia of the brain, in depressing all the so-called vital processes; and that the proper treatment of shock is in the first place prophylactic, namely, to prevent hæmorrhage before operation and during operation, and secondly, to cure shock by restoring blood to the brain as rapidly as possible, and then stimulate the heart by warmth, by good air, by strychnine, and by a normal saline solution injected into the rectum or veins. If all else is forgotten, we must keep firmly and carefully to the idea that the life of a man is in his blood, and in order to save a man's life we must save his blood.—*Therapeutic Gazette.*

WHY DOES THE HEART BEAT?

Recently at the fur Verein innere Medicin quite a lively discussion was provoked by a paper of V. Leyden, on the innervation of the heart muscle. V. Leyden first presented a brief historical sketch of those discoveries which have thrown light upon the still unsolved puzzle, Why is it that

the heart continues to beat uninterruptedly? The discovery of the influence of the pneumogastric, the accelerator and inhibitory nerves, the cardiac ganglia, etc., tended to support the theory that the regulation of the heart's activity was effected through motor nerves, whose centres are in the ganglia of the heart. Now, however, it has been observed that a heart which has no ganglia can beat, and this has led to the conclusion that this organ can continue its functions entirely independent of all nervous influence. This view is based upon the following observations: 1. The heart of the embryo pulsates long before any nerves at all can be shown to be present in it. 2. We have certain unstriped muscles in the body which are quite capable of contracting, and in which neither nerve fibres nor ganglia can be demonstrated; such, for example, is the muscular tissue of the ureter. 3. According to latest researches of the younger His, the cardiac nerves come from the sympathetic, while the cardiac ganglia belong to the spinal system; and, these being purely sensory, the nerves of the heart must be so too, and are in consequence incapable of giving origin to motor impulses. 4. End bulbs have never been demonstrated in the heart, although it is established that all the muscle cells are surrounded by nerves. V. Leyden named especially Engelmann and His as defenders of this new theory, and Waldeyer and Kronecker as strong opponents. He said that he was incompetent to decide the question. During the discussion, A. Frankel observed that the new theory does not explain why peripheral irritation of the pneumogastric causes the heart to stop. Schwarz thought it possible that there may be certain connections between the heart and the ganglion cells in the embryo which our present methods cannot discover. Benda declared that the Engelmann theory rests upon as weak a foundation as the one which teaches the irritability of the striped muscles. No one denies the existence of the nerves of the heart; then what purpose do they serve? It is not probable that they are of a purely sensory nature, as claimed by His: for the spinal ganglia, from which the cardiac ganglia are derived, pass out from the medulla, which contains both sensory and motor fibres. The sympathetic cells in all likelihood act as true reflex centres, in that they receive sensory impressions and send out motor impulses. This idea of sensory and motor impressions and impulses passing alternately through the same nerve fibres is tenable, for it has long been known that double impressions pass along the same nerve fibres. No one present defended the theory of Engelmann.—*Med. Record.*

CHRISTIAN SCIENCE AND THE LAW.

"Christian science," which may have been prophetically referred to by St. Paul when he wrote to Timothy about "science falsely so called," has apparently made itself amenable to the criminal law in England by the proceedings that preceded and it would seem safe to say directly caused or insured the death of an eminent litterateur. The sacrifice of one valuable life has at last called the attention of the public to the delusions which might perhaps have worked disaster to many more obscure individuals without such effect.

It seems strange that a man of culture, of such penetrative judgment, as some of his writings would imply, as Harold Frederic should have been a willing victim to what ought to seem to any practically minded man a very transparent delusion. While the fact is hard to account for, assuming him to have been in mental health, something may be allowed for the common and, as it were, very natural affection of the judgment in even any form of bodily disorder. We are all of us apt to be hardly our

normal selves under the influence of sickness, and even an educated and thoroughly well-balanced physician, to assume an extreme case, might, under certain circumstances and with certain surroundings, allow himself to be treated by altogether unorthodox and unscientific methods. There is, moreover, a remnant of superstition in all of us, and irrational prejudices and beliefs crop out in the most unexpected quarters. As a scientific investigator who has been amongst the foremost in discussing and developing some of the most important biologic questions, Mr. A. R. Wallace ought, it would seem, to be qualified to express a correct opinion on sanitary subjects, but we find him raving against vaccination, a preventive measure that has stood the test of one hundred years since Jenner's announcement of his discovery, and which has rendered comparatively harmless one of the greatest scourges of our race. With such examples as this, one need not be surprised at any vagaries on the part of the public or of less prominent individuals.

So far as known, there has not been a conviction for manslaughter of a Christian scientist in this country, though occasions for such an event have certainly not been wanting. In so far as the devotees of this delusion actively interfere to prevent the necessary remedial measures and the patient dies in consequence of this, it is hard to see how, with any reasonable interpretation of the law, they can escape its penalties. They certainly in some cases, like that of Mr. Frederic, prevented what might and probably would have saved life. The case may be different as regards the standing of Christian science where life is not involved, and we do not see the correctness of the conclusion in a recent editorial in the New York *Sun*, that, because a court held that contracts for such treatment are valid, the same court would necessarily hold that a charge of neglect and of manslaughter would not lie if death occurred under the care of a Christian scientist who it could be proven, excluded rational measures that presumably would have saved life. The civil and the criminal sides of the question may differ to some extent, but where the charge of criminal negligence or worse is raised, it would necessarily have to be seriously considered by any court, and it is not easy to see how well-proven evidence of this character could be managed so as to evade the penalty of the law. Judges and juries are fallible, however, some of them may be ardent advocates of Christian science, and it is difficult to say how these facts may distort judicial views and verdicts in special cases.

It will be interesting to follow the proceedings in the Frederic case and to see how British justice deals with the matter; the prominence of the victim and the special issues involved will tend to make it a *cause célèbre*. If conviction follows, the status of the delusion in English jurisdiction will be materially affected and it would seem improbable that it could derive any benefit under the plea of persecution if the facts were fairly published and understood. The results of a similar prosecution which has just been instituted in Cincinnati will also be followed with interest by the medical profession and the public generally.—*The Journal of the American Medical Association.*

CLINICAL PHENOMENA RELATING TO THE NERVOUS SYSTEM IN CONNECTION WITH DISEASE OF THE FEMALE GENERATIVE ORGANS.—Dr. A. F. Currier, New York, concludes a valuable paper on this subject which appears in the *American Gynæcological and Obstetrical Journal*, July, 1898, with the following conclusions: "1. The nerve connections between the uterus and ovaries on the one hand, and the viscera and central nervous system (cerebrospinal) on the other, are such as to warrant the belief in the abundant transmission of influ-

ences from the one to the other. As a corollary the removal of morbid conditions from the uterus and ovaries frequently results in the amelioration disturbance in remote but related organs. 2. Surgical operations upon the female genital organs are sometimes followed by lesions of the nervous system, but not with much greater frequency than operations upon other structures. Their relative infrequency, especially when the uterus or ovaries are removed, demonstrates the wonderful accommodative power of the physical forces. 3. Insanity after operations of this character is of rare occurrence as a primary result of such operation, and is usually transitory in its nature."—*Medical Review of Reviews.*

Correspondence

POSTPONEMENT OF THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

INTERNATIONAL EXECUTIVE COMMISSION OF THE PAN-AMERICAN MEDICAL CONGRESS.

To the Editor of DOMINION MEDICAL MONTHLY:

SIR,—I have the honor to announce that in April, 1898, I received from Dr. José Manuel de los Rios, Chairman of the Committee on Organization of the third Pan-American Medical Congress, a request that, in consequence of the then existing rebellion in Venezuela, no definite arrangements be made at that time relative to the meeting of the Congress previously appointed to be held in Caracas in December, 1899.

The following communication relative to the same subject is just at hand:

CARACAS, Sept. 25th, 1898.

DR. CHAS. A. L. REED,

Secretary of the International Executive Commission, Cincinnati, Ohio.

DEAR SIR,—After having sent my communication dated April last, I find it to be my duty to notify you that, although the considerations pointed out in it have already ended, our country has been scourged by small-pox which has taken up all our physicians' activities and time, depriving them of going into scientific works. And, as that state of mind of our people and government after such calamities as war and epidemic, would greatly interfere with the good success of our next meeting, I beg leave to tell you, in order you will convey it to the International Executive Committee, that our Government and this Commission would be grateful to have the meeting which was to take place in Caracas, in December, 1899, adjourned for one year later.

I am, dear Doctor,

Yours respectfully,

THE PRESIDENT.

(Signed)

DR. JOSE MANUEL DE LOS RIOS.

In accordance with the request of the Government of Venezuela and of the Committee on Organization, the third Pan-American Medical Congress is hereby postponed, to meet in Caracas in December, 1900.

For the International Executive Commission.

CHAS. A. L. REED,
Secretary.

OFFICE OF THE SECRETARY, Cincinnati, Nov. 5th, 1898.

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.. AND ..
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"A Merry Christmas and a Happy New Year."

THE CHEMICAL NATURE OF THE ACTIVE PRINCIPLE OF THE SUPRARENAL CAPSULE.

Ever since the announcement by Schäfer and Oliver of the peculiar action of an aqueous extract of the suprarenal capsule on the blood pressure, great interest has been aroused, followed by much speculation on the nature of this body. The profession know the chemical difficulty of extracting alkaloids, which are perfectly well known, by methods equally well known, but here was a substance, very easily oxidised, which occurred in the suprarenal gland in quantities of probably less than a fifteen thousandth part of a grain to each gland, and that if the nature of the substance were known, and a perfect method of extraction had been devised, it would require the glands of 2000 sheep to give us one drachm of the active substance. When we consider the amount of proteid and other material which must go into solution, we can conceive the almost hopeless outlook for the solution of this problem. If the problem was to be solved, it would be expected, as in the past, that its solution would come from some of the large German laboritories by a man who had spent his life at this work, and who had at his back one of those German factories, who make it their business to encourage all this class of scientiffc research, from the simple knowledge, that one discovery may mean a fortune to them. It is therefore a source of unbounded pleasure and pride, that we are able to announce, that, for the first time the laurels have been captured by our own continent, by the discovery, identification and analysis of the active principle of the suprarenal body by Dr. John J. Abel, Professor of Pharmacology, Johns Hopkins Medical School. The first step in this work is what is chemically known as benzoating the body, obtaining thereby a pure benzoate. This work, which was published by Prof. Abel, last year in *Johns Hopkins Hospital Bulletin*, as also in this paper this year, was subsequently confirmed by a German scientist, Fürth, who was working on this

problem. After obtaining the benzoate, Professor Abel then made other compounds, and as the result of his analyses he considered the empirical formula to be C_{17} H_{15} N O_4, thus approaching in elementary composition some of the alkaloids. The composition of pseudomorphine, for example, is represented by $C_{17}H_{19}NO_4$, that of cocaine by $C_{17}H_{21}NO_4$, that of sanguinarine by $C_{20}H_{15}NO_4$, and that of benzylidene collodine dicarboxyacid by $C_{17}H_{15}NO_4$, and among these alkaloids sanguinarine is noteworthy for its power to raise the blood pressure. It was found that skatol was one of the discomposition products of this body. It is of interest to note in this connection, as the author points out, that Stohr has shown that skatol is liberated when strychnine is heated with calcium oxide, and that Hoffmann and Konigs have obtained indol from tetrahydroquinoline by passing its vapor through a tube heated to redness. He considers the picrate will likely prove the easiest to manipulate and most valuable and promises future contributions in regard to it.

There is no doubt that the future of medicine lies in the domain of biological chemistry. It is there the greatest triumphs will reward the investigator, and the greatest benefit accrue to medical science from the practical application of his results. We can rest assured, however, with such a distinguished investigator as Professor Abel to head the school of biological chemistry here, that in the future we will have to share very few of our triumphs with Europe.

"CORONERS."

A very timely editorial on this subject appeared lately in the *Globe*. It said, as we have said before in these columns, that the position of affairs in this city in reference to this particular class of officers is, to put it very mildly, undignified.

To consider their first reference in regard to the unnecessary holding of inquests, we would say, that by the previous law a coroner could not hold an inquest unless he made a declaration of his belief that there were suspicious circumstances about the case which indicated foul play. It was then pointed out that the natural delicacy of conscience which existed in the professional coroner, had a tendency to let those cases in which there were no manifest evidence of foul play go by without an inquest, and thus many criminals escaped justice. To provide against this evil, due, as we pointed out, chiefly to the excessive tenderness of the said coroners conscience, there was inaugurated what has become so widely known in the effete East as the "open door." It might be remarked in justice to those who believed that the open door policy was not requisite for the holding of all the inquests that were necessary, that the number of inquests have not materially increased. We do not refer to the issuance of the coroner's warrant, for which the coroner is paid $5.00, and it is this $5.00 which looks as big as a house when the coroner gets on his bicycle and starts for the police station. The most active defenders of the present condition of affairs are the most notorious offenders against public and professional decency, and we consider the *Globe* is absolutely and unqualifiedly right in everything it has said in reference to this matter. As has often been said, the office of a critic is an easy one. It is more difficult to point out a remedy. The *Globe's* remedy, the appointment of an official coroner for the city on salary, not on fees, would undoubtedly greatly aid the ends of justice, besides being a great saving to the municipality. We, however, have to propose a remedy much simpler, much more ready of execution, and particularly practical in the present condition of affairs, and that is the appointment of the present police surgeons as coroners. There are three

of these gentlemen, each drawing a salary abundantly high for the work they have to perform, each eminently qualified for the office of coroner, and of such standing that the profession would feel perfect confidence in leaving this duty entirely in their hands. Further, there would be a saving to the municipality of practically the whole of the fees that now go to coroners employed indiscriminately, where the race is to the swift rather than to the strong intellect, certainly not to the most dignified of the profession. Another great advantage that would ensue would be the fact that the office of coroner would then be more closely in touch with the local department of justice. The only thing that would militate against the appointment of these gentlemen as coroners would be, that they might be connected with some large corporation where accidents are liable to occur through carelessness on the part of the employees or negligence on the part of the Company. However, we have here the two propositions, one of which should be acted upon. The *Globe's*, that an official be appointed. This would be a great improvement on the present system, and undoubtedly less expensive to the municipality. Ours, which as we have pointed out, we believe has advantages over the other.

Editorial Abstracts

IODOTHYRIN AND THYRADEN ON THYROIDECTOMIZED DOGS.

STABEL.—Experiments with iodothyrin and thyraden on thyroidectomized dogs. (*Berl. klin. Woch.*, 1897, Nos. 33, 35.) Immediately after thyroidectomy fourteen dogs were given iodothyrin, and eight thyraden, in spite of the treatment all died. —*From Cent. f. inn. med.*, 1898, p. 89.

ALBUMOSURIA AFTER THE USE OF SOMATOSE.

HAUN.—Alimentary albumosuria after use of large doses of somatose. (*Ther. d. Gegenw.*, 1898, p. 513.) A boy eight years old, with cerebro-spinal meningitis, was given 60 gm. of somatose a day to improve his nutritive condition. For the first eight days it was apparently well borne, and decomposed in the body; but after this time the urine became of a dark color, appearing as if somatose had been added directly to the urine. Its odor resembled that of somatose, and the urine, which was free from albumen, contained albumose in abundance. The somatose was then reduced to 10 gm. a day, and in three days the albumosuria disappeared. It seems that a large quantity of somatose may be used in the metabolism, but that if very large amounts are used the excess is eliminated by the urine. He recommends the presence of albumose in the urine as a guide to the administration of somatose.

IODINE DERIVATIVES OF ALBUMEN.

LIEBRECHT.—Iodine derivatives of albumen (Casein). (*Ber. d. d. chem. Ges.*, v. 30, p. 1824.) Periodide of casein, made by warming a mixture of 80 gm. casein and 20 gm. iodine on a water bath and extracting with ether, is a yellow powder with 17.8 per cent. iodine, most of which is in loose combination. It is soluble in hot alcohol. The iodide of casein, which is made by treating the periodide with sodium hyposulphite, water, alcohol and ether, contains 5.7 per cent. of firmly united iodine. Caseoiodine, made by treating the periodide with 10 per cent. sulphuric acid for two hours on the water bath, is a reddish brown powder containing 8.7 per cent. iodine and has properties like

Baumann's iodothyrin, and, according to Kocher, is very efficient in goitre.—*From Cent. f. med. Wissens.*, 1898, p. 274.

ACTION OF SOMATOSE ON THE MILK SECRETION.

JOACHIM.—A contribution to the action of somatose on the mammary glands of nursing women. (*Cent. f. inn. med.*, 1898, p. 233.) Joachim sums up his experience as follows: "Somatose is indispensable to the practitioner, if he wishes to influence the milk secretion of nursing women." In most cases there was an improvement in the appetite, the general condition, and there was a qualitative and quantitative improvement in the milk, but in a few cases even its prolonged use was without effect. Perhaps its use during the last months of pregnancy would be of service.

VARIOLA AND THE CHEMICAL RAYS.

BACKMAN.—Variola and chemical rays. (*Finska-lakar. handling*, May, 1898.) Sixty-two cases of variola were treated at Wibourg by Finsen's method, a method by which the violet rays were eliminated. Three adults and four children under two years of age were lost. His results however were very good; the period of suppuration was shortened and ameliorated and no cicatrices remained; on an average only 19.5 days were spent in the hospital, a shorter period than usual. Other acute exanthems as scarlatina, etc., were treated in the same way with equal success. He recommends a red veil in spring to avoid freckling.—*From Rev. d. Sci. méd.*, v. 52, 1898, p. 102.

ANTIVENOMOUS AND ANTITOXIC PROPERTIES OF THE BILE.

FRAZER.—Note on the antivenomous and antitoxic qualities of the bile of serpents and of other animals. (*British Medical Journal*, 1898, v. 2, p. 595.) Having found that bile is able to neutralize the toxic action of lethal doses of snake poison, Frazer thought it might have antitoxic properties toward toxines. He mixed dried rabbit bile with a lethal dose of the diphtheria toxine and injected the mixture into rabbits. The rabbits survived, and had only a slight fever. Control experiments with the toxine showed it to be toxic. Frazer also succeeded in isolating from ox-gall a substance possessing more antivenomous qualities than the original bile.

A PECULIAR CAUSE OF HÆMATURIA.

FRANK.—A case of hæmaturia and a peculiar cause for it. (*Wien. klin. Rund.*, 1897, No. 48.) A lady of about 42 years, the mother of three children, had suffered for six months with severe hæmaturia. The urine was of a clear red color and contained much blood. There was also great tenesmus, but no vesical catarrh. The examination of the uterus, adnexa and renal region proved negative. On cystoscopic examination the mucous membrane of the bladder was found covered with numerous uric acid crystals, whose sharp edges projected into the bladder. The mucous membrane itself was reddened and hyperæmic. The crystals were removed with a Bigelow's aspirator. The report of the patient two years later was that she was cured.—*From Cent. f. med. Wissens*, 1898, p. 248.

KWASS.

KOBERT.—Kwass.—(*Hyg. Rundsch.*, 1897, p. 1096.) Kobert speaks highly of the introduction of kwass into western Europe as an economical beverage which contains little alcohol and is suitable for farmers. It is the national drink of Russia. It is obtained by the simultaneous acid and alcoholic fermentation of flour,

rye, barley or buckwheat. Malt bread, or a mixture of these may be substituted for the flour. Sugar is added, and pepper is used to render it aromatic. There are no hops used as in beer. Its alcohol varies from 0.7 to 2% by volume. Sp. gr. 1.006 to 1.016, and in 100 volumes contains 0.035 to 0.159 carbonic acid, 0.07 to to 0.082 acetic acid, 0.180 to 0.48 lactic acid, and from 1 to 5.2 extract, consisting of glucose, dextrine, fats, salts, albumen, etc. It contains very few microbes, but an enormous quantity of fungi or yeasts. The typhoid bacillus and cholera vibrio soon die in it. In the hospitals one litre a day is the allowance.—*From Rev. d. Sci. med.*, v. 52, 1898, p. 212.

MONOCHROMATIC LIGHT AND BACTERIA.

BECK AND SCHULTZ.—Action of the so-called monochromatic light upon the development of bacteria. (*Zeits. f. Hyg.*, v. 23.) Cultures of chromogenic bacteria on nutrient agar were exposed four days to the action of the sunlight, others to diffused daylight, to the incandescent light and to the Rœntgen rays. None of the colored lights either killed the bacteria or impeded their development, though they seemed to exercise a deleterious influence upon the production of color by some of them. The diffused daylight favored their development and production of color. In the long run darkness, but especially sunlight, hinders the production of color by certain bacteria. The Rœntgen rays have no deleterious action upon them. —*From Rev. d. Sci. med.*, v. 52 1898, p. 43.

EARLY DIAGNOSIS OF TUBERCULOSIS BY THE RADIOSCOPE.

KELSCH AND BOINON.—Note on the early diagnosis of tubercular affections of the chest by the radioscope. (*Bull. de l' Acad. de med.*, 1897, No. 51.) In 124 cases, in which other methods showed an absence of pulmonary tubercular processes, the examination of the chest, from its posterior surface, by means of the flouroscopic screen, gave in seventy-three negative results, and in fifty-one showed various slight changes, as diminished transparency of one or both apices or of the pleura ; swelling of the bronchial glands or diminished excursions of the diaphragm on one side. Part of these changes were evidently due to tubercular processes, which had been latent or awakened by an auto-infection, so that the fluoroscopic screen corroborates the autopsy finds, which show that from one to two young persons out of every five have latent tubercular affections. The author suggests that it will be a valuable help in the early recognition of pulmonary tuberculosis.—*From Cent. f. med. Wissen*, 1898, p. 284.

CHEMISTRY OF THE ANTIDIPHTHERITIC SERUM.

V. SZONTAGH AND WELLMANN.—Comparative chemical investigations on the normal horse and antidiphtheritic serum. (*Deut. med. Woch.* 1898, p. 421.) Vaughan's isolation from various sources of nucleo-albumen possessing bacteriacidal properties would suggest the view that possibly the serum therapeutics could be replaced by nuclein treatment. The authors' investigations show that with the pepsin and hydrochloric acid test, normal horse serum and the antidiphtheritic serum react negatively for nucleo-albumen. The coagulated proteids from both likewise proved negative, so that the active principle cannot be a nucleo-albumen. The quantity of albumen progressively increases during immunization, so that the antidiphtheritic serum contains about 0.253 per cent. more than the normal. The ash in both is approximately the same, but the amount of chlorine is a little less in the antidiphtheritic serum. During the immunization the freezing point,

osmotic pressure and the electric conductivity diminish; the last is in proportion to its antitoxic power. The determination of the electric conductivity may serve as a practical guide of its antitoxic powers.

GERMS IN THE NORMAL RESPIRATORY TRACT.

MUELLER.—Germs in the respiratory tract of healthy animals. (*Muench. med. Woch.*, 1897, No. 49.) It has been a question whether in the organs of healthy animals germs occur. Nocard stated that during digestion bacteria passed into the chyle and blood, while Neisser found the chyle usually free from bacteria. The observations as to the presence of organisms in the bronchi and lungs have likewise been conflicting. Mueller studied under aseptic precautions rabbits, guinea-pigs and cats, and found in most cases the lungs sterile, and that the nose, pharyngeal cavity and larynx are important protective organs against bacteria. The pneumonias which are produced by cooling animals, Mueller thinks are due primarily to a lowering of the resisting power of the protective organs. His cooling experiments show hæmorrhage and œdema of the lungs and erosion of the gastric mucous membrane. Only in a few cases were bacteria present, and then in such small quantities that they could not be considered as the causative agent. It is probable that the cooling leads to changes in the blood and that the bacterial invasion is only secondary.—*From Cent. f. inn. med.*, 1898, p. 141.

PERTUSSIN, A NEW REMEDY FOR PERTUSSIS.

FISCHER, E.—Pertussin, extractum thymi saccharatum. (*Deut. med. Woch. Ther. Beil.*, p. 49, 1898.) In treating his five children who had whooping-cough, Fischer obtained only poor results with tussol, and the children soon refused to take it. He then tried pertussin and was surprised at his results. In a few days the clinical picture changed to that of a mere simple catarrh, with the disappearance of the cyanotic attacks. The children took it readily. To the two-year child he gave a teaspoonful four times a day, to the three-year-old one he gave one-half tablespoonful, and to the six and ten year old children he gave three-quarters of a tablespoonful. In acute and chronic laryngeal catarrh and bronchitis, pertussin aided the elimination of the mucous, so that it was coughed up without straining, and in a man of forty years with laryngeal tuberculosis it caused a cessation of the muco-sanguinous secretion in two days; the mucous came easier and the voice became clearer. He believes the favorable action due to a lessening of the spasmodic cough and a loosening of the mucous secretion without increasing its amount. In emphysema it soon controlled the attacks so that the patients kept it constantly on hand. He recommends it to avoid the difficulties in anæsthetizing emphysematous subjects and in laparotomies where post narcotic coughing would tear out the stitches. Pertussin simply consists of the fluid extract of thymian (*Germ. Phar.*), mixed with sugar and syrup in the proportion of one to seven. A similar preparation is obtained by mixing the oleum thymi with syrup, but this is apt to irritate the throat and stomach.

LESIONS OF THE NERVOUS SYSTEM AND CROSS STRIATED MUSCLES.

STIER.—Experimental investigations on the behaviour of cross striated muscles after lesions of the nervous system. (*Arch. f. Psysh.*, v. 29, No. 1.) Three parallel series of experiments on rabbits and dogs were performed to ascertain the results of lesions of the nervous system upon the striated muscles. The first consisted of the removal of the motor area for a definite region, the second in a hemisection of the cord, and the third of a resection of a peripheral

motor nerve. The operations were done under ether narcosis, after a previous injection of morphine. At definite times pieces of muscle were removed and examined, some fresh, and others after hardening. While the muscles after removal of the motor area showed but a slow and transitory change, after a section of the peripheral nerves there occurred, especially about five weeks after the operation, a marked diminution of the diameter of the fibres. This atrophy appeared more quickly in young animals. Later there occurred an increase of the connective tissue and sarcolemma nuclei. The cross striation remained a long time, and did not entirely disappear in any case. No true vacuoles were found. Only quantitative differences in the fibres were observed, and there was no point serving for the identification of the changes after section of the nerves from those after inflammation of the peripheral nerves. The cortical centres, according to these investigations, have only a slight influence on the nutrition of cross striated muscles, and removal of trophic influences cause only a simple atrophy; in some cases an increase of nuclei. The so-called degenerative changes seem to be a sequence of secondary causes. —*From Cent. f. med. Wissens.*, 1898, p. 285.

SUBCONJUNCTIVAL SODIUM CHLORIDE INJECTIONS IN EYE DISEASES

ZEHNDER—Use and therapeutic action of subconjunctival sodium chloride injections in eye diseases. (*Thèse de Bâle*, 1897.) Having noted the good effects of subconjunctival injections of sodium chloride in ulcers of the cornea it was suggested they would be efficacious in deep ocular diseases. In four cases of retinitis pigmentosa, three showed an improvement in vision, and two an enlargement of the visual field, while of ten cases of retinal detachment three recovered perfectly, and in five the retina reattached itself to a considerable extent; seven of these cases recovered a good part of the visual field. Good results were also obtained in uveal affections and in opacities and hæmorrhages into the vitreous.—*From Rev. d. Sci. med.*, 1898, v. 52, p. 277.

Physician's Library

A Text Book of Pathology. By ALFRED STENGEL, M.D. With 372 illustrations. Price, cloth $4.00; one-half Morocco $5.00. Philadelphia: W. B. Saunders. Toronto: J. A. Carveth & Co.

The author informs us in his preface that it has been his effort to present the matter in as practicable a form as possible, and always from the point of view of the clinical pathologist. Except in a few instances, discussion of methods of examination has been omitted, to avoid increase in the size of the book. For similar reasons the pathology of the skin and of the organs of special sense are omitted. The work is made up of 802 pages, of which the first 300 are devoted to general pathology and the last 500 pages to special pathology. The general pathology is divided into eight chapters, under the following heads: The Etiology of Disease and Disorders of Nutrition and Metabolism; Disturbances of the circulation of the Blood; Retrogressive Processes; Inflammation and Regeneration; Progressive Tissue changes; Bacteria and Disease due to Bacteria; Animal Parasites and Diseases caused by them. The increasing importance attached to bacteria in the production of disease would naturally be reflected in the pages of the latest work on

pathology. The chapter is headed Bacteria and Diseases due to Bacteria. It opens with a short history, and the credit of first demonstative micro-organisms is given to Leeuwennoeck. Then follows an account of their morphology, demonstration, biology, and a brief account of their products. The first portion of this chapter deals with diseases definitely bacteriological; these include separative diseases, gonorrhæa, pneumonia, rhino-scleoma, diphtheria, typhoid fever, cholera, tuberculosis, leprosy, glanders, malignant edema, anthrax, infectious emphysema, tetanus, actinomycosis, mycetoma, relapsing fever, influenza, bubonic plague. Among the diseases upon the bacteriology of which we cannot yet speak definitely, are set down syphilis, chancroid, yellow fever, measles, scarlet fever, mumps, whooping-cough, typhus rabies, rheumatism, Malta fever and beriberi. Part II, dealing with special pathology, is very well done. The portion on then nervous system is not as strong as the rest. In it we and little reference to the newer pathology based upon the important discoveries of Golgi and Ramon y Cajal. While the neuron theory is not sufficiently advanced to furnish a system of classification, yet we feel that some reference to it should be found in the latest work on pathology.

Essentials of Materia Medica, Therapeutics, and Prescription Writing. By HENRY MORRIS, M.D. Fifth Edition, Revis and Enlarged. Philadelphia: W. B. Saunders. Toronto: J. A. Carveth & Co., 1898. Price $1.00.

This volume forms No. 7 of Saunders' question-compends. We are informed on the first page of this volume that over 160,000 copies of this series have been sold. This to the publisher is indisputable evidence of the value of these helps to students and physicians. Like its predecessors it is arranged in the form of questions and answers. The author follows a classification based almost wholly upon therapeutic grounds, an arrangement which in former editions has been severely criticized. We fully agree with him that no classification which can be adopted at the present time will be anywhere near perfect. We are also of the opinion that any classification is better than none, and will certainly prove a help to the student. A mere alphabetical arrangement is of no value, except to facilitate reference, and this is readily supplied by an index, of which the present volume contains an excellent one.

The Care of the Baby.—A manual of mothers and nurses, containing practical directions for the management of infancy and childhood in health and in disease, by J. P. CROZER GRIFFITH, M.D., Clinical Professor of Diseases of Children in the Hospital of the University of Pennsylvania; Physician to the Children's Hospital, to the Methodist Episcopal Hospital, and to St. Agnes' Hospital, Philadelphia; Member of the American Pediatric Society and of the Association of American Physicians. Second Edition Revised. Price $1.50. Philadelphia: W. B. Saunders. Toronto: J. A. Carveth, & Co.

The object of the work, as stated in the original Preface is to make the author's statement "plain and easily understood, yet scientifically accurate, in the hope that the volume may be of service not only to mothers and nurses. but also to medical students and to those practitioners whose opportunities for observing children have been limited." This object should be thoroughly fulfilled, to judge from the exhaustive treatment of the questions discussed in this interesting volume. To mothers, especially those

compelled rely momentarily upon their own resources, the work should prove of inestimable value. The style is lucid and earnest, and the multitude of details receiving attention; the practical application of hygienic principles frequently enforced by apt illustrations, together with the profound interest manifested by the author in his chosen field of labor, recommended the present treatise as worthy of entire confidence. "The Sick Baby" is treated in extenso, 130 pages being devoted to the subject, covering a wide field of inquiry, and containing invaluable suggestions which every mother, in the absence of a physician, must readily appreciate. The author is frankly to be commended, both for his purpose and for his admirable execution of his task.

American Pocket Medical Dictionary. Edited by W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the Hospital of the University of Pennsylvania; Fellow of the American Academy of Medicine, etc. Containing the Pronunciation and Definition of over 26,000 of the Terms Used in Medicine and the Kindred Sciences, along with over 60 extensive tables. Price, Large 16mo. Pp. 518. $1.25. Philadelphia: W. B. Saunders. Toronto: J. A. Carveth & Co.

The editor of this little book has attempted to improve on all previous work of this class, and he has succeeded at least in bringing his vocabulary up to date, which is absolutely essential in this rapid period. Besides the words there is much matter in tabular form which will prove of value to students and others.

PAMPHLETS RECEIVED.

"A Salicylate Compound in Sub-Acute Rheumatism and Gout." By GEO. H. THOMPSON, M.D., St. Louis. Reprinted from the *Journal of Surgery and Gynecology*, August, 1897.

"Serpents and their Venom; Copperhead, Coral and Rattlesnake." By MERRILL RICKETTS, PH.B., M.D., Cincinnati, Ohio. Reprinted from the *Cincinnati Lancet-Clinic*, September 3rd, 1898.

"The Surgical Treatment of Uterine Myomata." By HENRY O. MARCY, A.M., M.D., LL.D., Boston, Mass. Reprinted from the *Journal of the American Medical Association*, September 10th, 1898.

"Report on the Use of Formaldehyde as a Disinfectant, especially in its Practical Application to the Disinfection of Infected Dwellings, Bedding, Clothing, Books," etc., under the supervision of the Department of Health of the City of New York, 1898. By W. H. PARK, M.D., New York, and A. R. GUERARD, M.D., New York.