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THE MUTUAL RELATION OF THE PROFESSION AND THE PUBLIC.*

BY

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It appears to me that in these periodical gatherings of ours we are so much engrossed with the scientific aspect of medicine that we lose sight almost altogether of the ethics of our profession.

I have, therefore, thought it not unwise on the present occasion to depart from the traditional custom of my predecessors to devote a few observations to a subject which I deem to be of very great importance, not only to the members of our profession, but also to the public in general, namely: "The Mutual Relation of the Profession and the Public."

In dealing with a subject of this kind, I must necessarily say some things that would be out of place before a purely professional audience. In other words, my audience being promiscuous, my remarks must be of the same character.

I.

ATTITUDE OF THE PUBLIC TO THE PROFESSION.

Let us first enquire as to the present attitude of the public towards us as a profession. Is it one of confidence and respect? If not what are some of the causes contributing to this condition of things?

That there is not that measure of confidence and respect manifested towards us by the lay members of society which we have a right to expect is painfully evident. That there is adequate reason for this is not so clear. Does the fault lie with the public, or are there elements of weakness in our own ranks to account for it? To be able without prejudice to place the blame where it belongs requires careful discrimination.

* Read before the Annual Meeting of the Medical Society of Nova Scotia, July 4, 1900.

I am convinced, however humiliating the confession may be, that much if not most of this lack of appreciation which characterizes the public mind towards us is due to causes emanating from ourselves. What then are some of the vulnerable points in our professional armour that leave us open to attack?

1. NARROW-MINDED JEALOUSY.

Good wholesome criticism of each other among ourselves is a legitimate practice that often results in very much good. But the pernicious habit of indiscriminate belittling of each other in the presence of the lay public is a fruitful source of that merited contempt which we so much deprecate and so much deserve.

We often meet physicians who are always ready and eager to disparage their fellow practitioners, who cannot view with equanimity their attainments or success—men who delight to magnify in others faults that are perhaps more conspicuous in themselves; men who imagine that all wisdom dwells in themselves—who are always attributing false motives for the more generous acts of their more successful rivals, and who seek by detraction and misrepresentation to injure their professional standing. Such men, however clever they may be, can only bring contempt on themselves as well as on the whole profession to which they are not an ornament but a disgrace.

Every medical man and lay man in my hearing can recall instances of the most discreditable tactics resorted to by dishonorable members of our profession for bringing reproach on the fair fame or good name of an honorable rival, forgetting that the reproach which they seek to attach to the name of another recoils on their own heads and discredits the whole profession.

How much more honorable, how much more becoming and elevating to the profession if we should be always as ready to minimize each others imperfections, to condone each others faults and thus help a fellow laborer over the rough places in his professional journey.

2. MISFITS.

Like every other profession or calling in life, ours is not exempt from the misfortune of misfits.

There are men in our ranks who are failures because they lack in some or all of those characteristics that enter into the general make up of a good physician.

What are some of those qualifications? A love for his calling. A consciousness of his great responsibilities. A keen perception of human nature. A large share of sympathy for human suffering. And a competent measure of common sense. Of course a thorough knowledge of his profession is taken for granted as an essential element of success. Few medical men are endowed with all these virtues in their full develop-

ment, but without a competent share of some of them we must fail to impress the public that we are fit to represent a great and noble profession. And yet I know some and have heard of many others who manifest in splendid reality these elements of a good physician. We cannot all be "McClures," but we can strive to imitate this noble ideal.

3. SNAPSHOT DIAGNOSIS AND SLIPSHOD PROGNOSIS.

There are hundreds of people living to-day to laugh at the physicians who told them many years ago that they had but a short time to live.

There is nothing so embarrassing to the average physician as the importunities of his patients and their friends regarding the nature and issue of their illness. "What is the matter," and "will he get well," are questions that ring in our ears with ever increasing emphasis till we are almost in despair. Sometimes there is no escape from the assaults that are made on us by interested and disinterested friends as they take up one after the other all the strategic positions on the premises as we are taking leave of our patients; and if we are fortunate enough to escape the vigilance of this advance guard it is only to be waylaid by some kind neighbor along our line of retreat. These interrogations could often be borne with Christian resignation, were they not put with the same sublime indifference as questions regarding the weather or a dog fight.

There are times when it is the undoubted duty of the physician to be plain with his patients and their friends, to warn them of the probable issue when there are interests at stake demanding prompt action. But in the great majority of cases a prudent reserve will best serve the interests of patient and physician.

The candid physician is an admirable character provided his candor is fortified by sound judgment and definite knowledge. And people should know that the specific duty of the physician is to treat his patients and not their friends, although it is often more difficult to do the latter than the former.

4. COMMERCIALISM.

Medical men have rights as well as other people.

They have a right—and it is even their duty—to provide for themselves and their families. They have a right to look after their own health, although this is often a most difficult matter. And with a view to these ends they have a right to charge reasonable fees and to take adequate steps to collect them. God knows that the conscientious physician earns all he gets and a great deal he never gets. These rights of the physician will readily be conceded. But they are only subordinate and conditional. Subordinate to the interests of his patients and conditional on having performed his whole duty to those who have entrusted him with their lives. We have no right to prostitute our skill or

our talents to the mere getting of money. The interests of our patients and the honor of a noble profession have first claims on us, and in so far as we depart from this line of professional rectitude we depart from the true genius of our profession which is to relieve pain, to save life, and to practice charity.

5. MISCONCEPTIONS.

So far we have been considering some of the defects in our own ranks that contribute to that lack of cordial appreciation of our services which we have a right to expect from a generous public.

For these blemishes on the escutcheon of an honorable profession the members of that profession are directly responsible. But there are other causes operating to bring us into contempt; causes for which we as a profession are not directly responsible. These causes emanate from the people themselves who misconstrue the true aims and motives of the profession. It is a strange thing, but true, that every community, every society, every church, every profession, is judged not by the many true and loyal members but by the few unworthy ones that are to be found in all these. That there are defects and serious defects to be found in all of us and in the best of us is beyond dispute. But that the profession as a whole is actuated by unworthy motives is a charge to which we plead "Not guilty."

There are other things we count dearer than fame or money or comfort. We have characters to maintain untarnished; we have reputations to build up and guard; we have the honor of a noble profession to uphold. These are heritages that money cannot buy—that selfishness and unmanly bickerings cannot give us. The true physician would rather die a poor man with an approving conscience and the benediction of some fond mother whose son or daughter he had helped through a critical illness than die rich in filthy lucre despised by those whom he had despoiled—whose last dollar he had taken for services of doubtful value rendered only with a view to his own personal interests.

Even when we come to these society meetings our motives are misconstrued. Some people say we meet to devise ways and means for the betterment of our material interests—to discuss fees and finances. Although we might very properly devote a part of our time at these meetings to a discussion of these and kindred topics—although we would be within our rights in safeguarding ourselves against ungrateful and unscrupulous patients who sometimes try to defraud those who had been instrumental in rescuing them from the perils of their own indiscretion; without. I say, relinquishing any rights which we may have in protecting ourselves against rogues and robbers, I am proud to be able to say that these are not the themes that occupy our minds on occasions like the present.

We meet for the mutual exchange of practical ideas that may be of service to us in the discharge of the great trust that is committed to us ; that we may be the better equipped for fighting the great battle that we are waging against disease and suffering. We meet too that we may see old friends and make new ones. And as "iron sharpeneth steel," so we by rubbing against each other may sharpen our wits ; and by mutual contact with each other we may learn to love what is good and noble and manly in our fellow practitioners, and thus learn lessons that shall make us better men and better physicians.

Then again, it must not be forgotten that there is no professional man who so much needs and so rarely can take a holiday as the medical man. Even when we do succeed in getting away from home we are not free from fear of being summoned home to minister to the fears or necessities of some poor fellow mortal unless we can go where there are no means of communication which is a difficult matter in these days of telegraphs and telephones.

Then there are in the minds of the people misconceptions as to the nature and scope of the science of medicine. The public generally know less of this than of any other science. And this lack of knowledge is the origin of many superstitious notions, even among people who are otherwise well informed ; and is largely responsible for that unfortunate craze for quack medicine and quack doctors, which in our day has assumed the proportions of an epidemic. Anything partaking of the nature of humbug has a peculiar fascination for many people. A patent medicine advertisement surmounted by the picture of a Red Indian with feathers on his head, or that of a man with electric sparks radiating from various parts of his naked body has for some people an irresistible charm. The charlatan who talks mystery is to them the embodiment of wisdom.

There is no mystery in medicine. The mystery is in the mind of the man who arrogates to himself occult powers, who ignores the accumulated experience of an educated profession—who vaunts his remedies as "cure alls" and preys on the credulity of an afflicted public with no other object in view than how much money he can get out of them.

Time would fail to even enumerate the false notions in the minds of the people as to the scope, the aim and the objects of the science of medicine. Perhaps one of the most common and the most baneful in its effects is the idea that every disease has definite symptoms and is labelled with its antidote and that all the physician has to do is to find out the name of the disease, apply the antidote and cure the malady. Nothing can be further from the truth than this idea ; and the more enlightened the people become on this point the lighter will be the burden of the medical man. Let them learn that the great majority of diseases run their course and terminate by a natural process without

medicine and often in spite of medicine; that many diseases have many symptoms in common; that it is only after patient waiting and watching that they can be differentiated; and that in many cases a diagnosis can be made only in retrospect. They should know that after all nature is the great healer and that our business is to assist her in her beneficent designs; to study the patient rather than the disease—to learn his peculiarities—to adapt our treatment to the conditions as they arise—to relieve pain—to cheer and encourage our patient and thus help him aver a crisis; or, failing to do this as fail we often must, to smooth his dying pillow and show by our sympathy that if we cannot always save we can sometimes administer comfort.

II.

REMEDIES.

What are some of the remedies for this condition of things that we have been so far considering?

1. DO OUR DUTY TO OUR PATIENTS.

The first and paramount duty of the physician is to his patient. Everything else should be secondary and subordinate. All our time if need be is his. Nothing short of the very best we can do will suffice. When the unfortunate victims of disease and suffering appeal to us for help they expect us to do our utmost on their behalf; and the physician who suffers considerations of personal comforts or pecuniary advantage to interfere with this sacred duty is not worthy of his high calling.

It is to be feared that too many of us transgress the tenets of our profession by a too solicitous regard for our own comforts and even for our own personal dignity. Dignity is a commendable ornament to carry around with us when we can do so without detriment to the interests of our patients, but when life and death are at stake, dignity to the dogs!

When duty calls, no consideration, social, personal or pecuniary, should stand in the way. To do good and practice charity is the gospel of the medical man.

2. MAINTAIN THE HONOR OF THE PROFESSION.

Ours is a noble profession, and if we would merit the respect of the lay public we must respect ourselves. To this end it is not enough that we comport ourselves in such a manner as to be above reproach. We must qualify ourselves for the great responsibilities that rest upon us as a profession. We must maintain the highest standard of professional education consistent with our opportunities and limitations. We must be scientific physicians as well as moral men. We must discountenance quackery in our ranks as well as out of our ranks. There are many

charlatans practising under a regular diploma and protected by a certificate of registration, men who degrade their high calling by pandering to popular applause—by resorting to illicit and irregular methods for gaining practice or position. It is the duty of an enlightened and united profession to frown down anything and everything that savors of meanness or professional misconduct. Not until we rise above the strife and meanness and chicanery that disfigures the noblest of all professions, save one—not until by self-sacrifice and professional uprightness we prove ourselves worthy, shall we receive that due measure of public recognition which we so much long for.

3. EDUCATE THE PEOPLE.

Could we succeed in eradicating from the public mind the various forms of error regarding the theory and practice of medicine we would succeed in removing one of the most effective barriers to our individual usefulness, as well as one of the chief causes for that lack of cordial appreciation of our merits as a profession to which I have already adverted. That this would be a task of herculean proportions, I readily admit; but a due appreciation of its importance, a just conception of our responsibilities as public educators, would remove many a difficulty. Our spheres of usefulness are not limited by our daily routine of seeing patients and prescribing for them. We must educate them. Our daily contact with the people and our intimate relation to them as family physicians gives us many opportunities of imparting instruction on matters medical. Much information can be given without compromising the private rights of the physician or the dignity of the profession. Some of the medical journals are advocating popular addresses on medical topics on the evenings set apart for the expensive and useless banquets. I commend this to the earnest consideration of this society.

It is not enough that we do our best to lift up the people to a higher plane of scientific medical knowledge. It is our business also to instruct them in the laws of health—to teach them temperance, temperance in eating and drinking,—temperance in the indulgence of those organic functions, the abuse of which makes so many moral and physical wrecks. It is our duty to show the people how to restrain their passions by restraining our own—to elevate the standard of moral and physical purity the fostering of which is an earnest of the highest type of manhood and womanhood. In order to teach purity the medical man must be pure himself; pure in thought, pure in word, pure in act, so that by practice as well as by precept, he may win the confidence and esteem of those with whom his daily rounds of duty bring him in contact. The churches are sending medical missionaries to the heathen. There is much need of them at home. It is our duty to preach as well as to practice.

4. BE GOOD CITIZENS.

Passive obedience to law and order does not alone constitute good citizenship. There must be active work for the good of the community.

There are many social and domestic problems with which the physician is peculiarly qualified to deal. His intimate relations with the members of society as family physician give him many opportunities of learning the secret vices that are sapping the foundations of the social fabric. It is not enough that he should warn privately those whose follies are undermining their physical constitutions. It is necessary sometimes that public action be taken to protect society and especially the youth of our communities against contamination and vice. Even the refinements, so called, of modern society, sometimes require the veto of the physician. We should have the moral courage to denounce what is debasing and dangerous in social life and customs. The physician should also identify himself with all measures looking to a betterment of the intellectual, educational, industrial, and recreative pursuits of the people.

In order to be a good citizen it is not necessary that we be politicians. I think the best interests of the profession as well as society would be served by abstaining from active participation in political strife.

The physician is sometimes appealed to by aspirants for political honors to use his influence in their behalf. I think a proper conception of our relation to our patients forbids us taking advantage of this relation for the purpose of influencing free choice or free action. The average physician cannot afford to be a politician. He has a right to think—to discuss men and policies and even to vote that he may promote good government; but to be an active partizan is against the genius of our profession.

Of course there are bright and shining lights in our ranks who may and ought and do enter the arena of practical politics. The interests of the profession and the public demand their presence in our legislatures.

Some distinguished physicians have become distinguished statesmen. Such men reflect credit on the profession and are better representatives because of their intimate acquaintance with the frailties of human nature and the wants of the people.

III.

ATTITUDE OF THE PROFESSION TO THE PUBLIC.

Whatever difference of opinion there may be as to the attitude of the public towards the profession, there can be no doubt as to the converse of this.

The history of medicine from remote ages down to the present time proves beyond cavil that this attitude is one of unselfish devotion to the best interests of the people.

The unprecedented progress in medicine and surgery during the last half a century attests the unwearied industry of patient investigators in every department of medical work. But it is not necessary to go outside of the rank and file of the busy workers in our profession to find proof that the life of the busy practitioner in city and country is one of unceasing toil for the good of others. But if further proof were needed to show the unselfish character of our attitude as a profession, it will be found in the stand we take on the question of preventive medicine.

I think it safe to say that there is more effort put forth—more brain work expended—more privations endured, more heroism manifested by patient workers in this department of medicine than in all the other departments combined. And rightly so, because we can save more lives by prevention than by cure. And why all this patient labor and research? To open up new avenues of wealth for the practising physician? To devise new schemes for getting into the pockets of the people? No! It is a labor of love. It is work undertaken without hope of reward, except the reward that comes to us in common with the other citizens of the commonwealth through the increased security to life and health as the result of sanitary reform.

It will readily be admitted that the more disease there is among the people the greater the source of revenue for the doctors. If then, as some people say, the doctors are concerned only about matters affecting their own pecuniary interests why do they toil and plead for measures to prevent and suppress disease? The present state of sanitary law and quarantine in all civilized countries is a standing testimony to the unselfish character of the medical profession.

I have seen it somewhere stated that altruism is the foundation of all sanitary science and law. To the medical profession is due the credit of initiating and putting into operation all practical measures for the prevention and suppression of preventable disease in every country where sanitary laws are in practical operation.

What would be the condition of our country to-day if these safeguards and restrictions were withdrawn? We enjoy comparative immunity in our homes to-day, because there are faithful watchmen ever on the alert to raise the danger signal whenever and wherever we are threatened with an outbreak of the ordinary contagious and infectious diseases that are always lurking in sporadic form in various parts of the province, as well as the more virulent epidemics that threaten us from abroad.

IV.

MUTUAL CO-OPERATION FOR THE COMMON GOOD.

In order that there may be mutual co-operation there must be mutual trust. Do we as a profession merit the confidence of the lay public? Do we discharge in full the responsible duties of our high calling?

The relation of the physician to his patient is a sacred one. Do the people fully realize this relation? The family physician is not only the custodian of your physical health and well-being, but also of your family history. He is the father confessor to whom are committed the dearest secrets of your life. To him are known your secret vices and your worthy and unworthy motives. And yet many people dismiss their physician as they do their grocer or their butcher. They treat their physician on the principle "for value received." I pay my doctor as I pay my hired man; and when my ends are served I dismiss him with the same scant courtesy. This principle is vicious as well as false. The correct principle would be, "For services which cannot be computed in dollars and cents, I contribute of my means to help my doctor to live, and knowing as he does my secret life, I shall ever esteem it my privilege not only to show him my gratitude, but to retain his friendship."

What is your life worth? And yet some people treat their physician as if it were not worth very much.

Is there any reason for this condition of things? Do any of us basely betray those private and family secrets that come to us through our relations with our patients? The pertinent, and I had almost said impertinent, questions put to us by anxious enquirers regarding the troubles of their neighbors, sometimes lead the unwary physician into forbidden liberty with the sacred rights of those whose misfortunes compel them to lay bare to him the secrets and the motives of their lives. Let us guard this sacred trust and so merit the confidence and esteem of the public.

I have already adverted to the work of the medical profession in the field of sanitary medicine. Notwithstanding this work and the comparative immunity of our province against preventable disease, there remains yet a great deal to be done along these lines. And it is only through the active and intelligent co-operation of the people that this work can be successfully accomplished. In order to secure their co-operation the public must be educated not only regarding the necessity for sanitary regulations, but also as to the reason for them. I meet people every day who deny the infectiousness of such diseases as diphtheria and typhoid fever. These people have the audacity to advance their opinions against the accumulated experience as well as the scientific knowledge of all ages. Our first duty then is to remove these gross errors and thus prepare the public mind for submission to legal enactments for checking these diseases as well as for active co-operation with the medical profession and the health authorities for putting these regulations into practical operation. Our Provincial Board of Health under the chairmanship of the indefatigable Dr. Reid, is doing valiant service in this department of work, not only in guarding against epidemics, but also in enlisting public and professional sympathy and co-operation. Do they receive

from their fellow practitioners or the public the encouragement and assistance they deserve? Notwithstanding this apathy there are not wanting evidences that the trend of public opinion as manifested through our representatives in parliament is in the direction of a recognition of the necessity for definite action to promote this very important branch of the public service.

It has always been a puzzle to me whether our legislators should lead public opinion or whether public opinion should lead our legislators. One thing, however, is certain, that when public opinion demands reform of any kind our legislators must bow to the mandate of the people. The logical inference then is; let the profession educate the people and let the people educate their representatives, and let the representatives give us legislation.

The great desideratum in this province as in other provinces is adequate funds for putting into practical effect regulations and laws already on our Statute Books. But we have no right to demand legislation involving the expenditure of public money unless the people are prepared to endorse such legislation. The medical profession are a long suffering profession. We devote a large portion of our time to gratuitous work. And although we are always ready to respond to the call of charity there is a limit to our forbearance. Is it fair then after we have spent much time in devising sanitary measures which are primarily for the public good to ask us to do municipal or departmental work for nothing? Boards of Health, Sanitary Inspectors and other officers whose duties are not only responsible but sometimes onerous are entitled to remuneration for their services. A healthy public sentiment on this aspect of the case would secure for us legislative and municipal recognition.

We are not unmindful of the fact that our influence and representation in this direction are not without some effect. It is gratifying to know that our federal and local authorities are awakening to the importance of this branch of the public service. This is evidenced by the fact that the authorities at Ottawa last year, sent a delegate—one of the leading members of the profession in this province to the Congress on Tuberculosis which met in Berlin. Dr. Farrel's report of that convention has been circulated among the members of the profession and others. It is a succinct résumé of the proceedings of that convention and their conclusions on the subject of tuberculosis; and this society could not better contribute to enlighten public opinion on this subject than by causing copies of this report to be more generally distributed among the people.

We hail also with pleasure the Act of our Local Legislature by which they have appropriated a sum of money for the erection and maintenance of a Sanitarium for tuberculous patients—also for sanitary inspection in the various municipalities of the province. This latter will help pay the

expenses of those officers should their duties call them into the more remote districts of the counties. These are pledges, we hope, of better things to come. But they are not enough. We want more. \$15,000 is not enough to provide accommodation for all the patients that would take advantage of Sanitarium treatment.

Then again, we want a Bureau of Vital Statistics. Year after year the attention of this society has been directed to the importance of this matter; and year after year representations are being made to our legislatures to have this defect remedied, but without avail. I am not aware that any united action has been taken by resolution of this society. A venture in this way might prove more availing.

The subject of tuberculosis is one of transcendent importance and now that it is recognized as a contagious disease it is essential that definite steps be taken to enlist public co-operation in our efforts to abate its ravages.

Last year a very able paper on this subject was read before this society by Dr. A. P. Reid. In this paper the author deprecates the lack of interest manifested by the profession generally on the subject. This charge is well taken. Upon the members of the profession rests a tremendous responsibility in this respect. To us are committed the most vital interests of the people—the lives and well-being of their friends and loved ones. Let us rise to a due sense of this responsibility, for not till then can we hope for much progress to be made.

That vast and almost insuperable obstacles to a general diffusion of knowledge on the subject of sanitary science present themselves is a lamentable fact. Notwithstanding these difficulties—difficulties arising out of lack of education and the prevalence of superstitious notions there is much that can be done by the physician in his private intercourse with the people to enlist their sympathies and enlighten their minds in behalf of such measures as are necessary for carrying out preventive measures against this fell destroyer of the youth and flower of our land.

Then again, we want a thoroughly equipped laboratory for bacteriological investigation. No Board of Health can carry out any adequate system of sanitation without this. Our Board are doing what they can under very adverse circumstances, and to Dr. Hattie, under whose charge this department is, are due the thanks of this society for his faithful services and courteous consideration. But to make this or any other department of public health thoroughly effective we must have funds. How are we to obtain these funds? Either from private philanthropy or from the state. Private philanthropy is not cosmopolitan enough in its sympathies to be depended on. Public health is of universal import. Every man, woman and child, is affected for good by the enforcement of sanitary regulations. It is, therefore, but right that all should contri-

bute in order that its provisions may be properly administered. A direct tax would not be popular in the present temper of the people. The only alternative, then, is the ordinary revenues of the state. How are we to secure legislation to this end? By enlisting public sympathy and co-operation.

A word or two regarding the work of the Provincial Medical Board. This Board is doing good work in guarding our ranks against inferior recruits, and in protecting the public against irregulars. But their hands are tied, first, for want of funds; secondly, for want of public sympathy. The public charge that the crusade of the regulars against quacks and the vendors of nostrums is begotten of selfish motives. We repudiate this charge. Every medical man knows and the public ought to know that if these charlatans were left unmolested, the carnage that would follow would add materially to the practice of those that are fighting to suppress them. We are fighting them, not because they interfere with our business, but because they are a menace to public health and life; not because we want to protect the profession, but because we want to protect the people. We want the sympathy and support of the people in our laudable efforts to rid our country of this pestilence. For while public sympathy is with those who defy the law it will be impossible to get evidence to convict the law breaker. Every physician and every layman in my hearing can testify to numerous instances of irreparable loss of health, and some instances of loss of life clearly traceable to the gross ignorance or culpable presumption of those sharks who go about seeking whom they may devour.

The Provincial Medical Board are doing what they can to exterminate these enemies of the public health, but they want funds to prosecute and evidence to convict. These prosecutions are for the public good. The public should encourage our efforts and by sympathetic co-operation help to put down fraud and deception.

The medical man has much to contend with in his efforts to promote public good. Among these difficulties there is none more discouraging than lack of public sympathy. But in the midst of our discouragements we are not without hope that with an enlightened public sentiment on our side, and a united medical profession to work, our efforts will ultimately be crowned with success. And then with antiseptics and antitoxins and sanitation and sanatoria and quarantine laws and well paid officers to administer them, there shall be universal health and men shall die only because they will be too old to live.

CHILLS IN TYPHOID FEVER.

BY

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The attention of clinicians has been particularly called within recent years to the occurrence of extreme rigors associated with typhoid fever, either in the regular course of the disease or in some of its more serious complications. In Southern latitudes, especially, where the presence of chills in various fevers is apt to be ascribed to the growth in the blood of the malarial parasites, the exhibition of rigors in typhoid fever is usually considered to be due to a combination of intermittent and enteric fever, and the suspicion always exists that the sudden rise and fall in temperature is not due to the typhoid lesions but to the plasmodium malariae.

A number of cases of the combination of malaria and typhoid have been reported in the Medical and Surgical History of the War of the Rebellion, where the soldiers stationed in southern camps under unhygienic conditions contracted both diseases. For a number of years the occurrence of these two diseases in combination was a subject for great dispute, and the question was only finally settled after the outbreak of the Spanish-American war, when soldiers returning from the Philippines were found to have large numbers of malarial parasites in the circulating blood, and to have as well the clinical symptoms of typhoid fever, including a positive Widal reaction, which persisted after the disappearance of the parasites from the blood after the administration of quinine.

The following case which occurred in the Medical Wards of the Johns Hopkins Hospital in the service of Dr. Osler, which by his permission is here reported, represents a combination of symptoms which for the period of the entire stay of the patient in the hospital was looked upon with suspicion as being a combination of typhoid and malaria, but which during life to all apparent observations was absolutely negative for malaria and which at autopsy showed positive evidence of the lesions of typhoid fever.

CASE: Daniel Ryan, aet. 40, white, painter by occupation, admitted to the Johns Hopkins Hospital, March 5th, 1899, complaining of stomach trouble and rheumatism. Family history negative for constitutional diseases.

PERSONAL HISTORY: Smallpox at 10 during the Chicago epidemic, no history of malaria at any time; rheumatism at 22, beginning in the

joints of both feet which were swollen and painful, tender to the touch. Both knees were then involved, then hips, hands and shoulders. No reason could be given to account for the attack. Has used lead in painting for the past 15 years, but has had no attacks of lead colic. Lues ; initial lesion at 20, secondary eruption on face, mucous patches in mouth and throat ; no rheumatic pains and no loss of hair. Was treated for this at Hot Springs, Arkansas, and has had no symptoms since the secondary eruption.

Contracted gonorrhoea at 22, treated with injections and since then has had a stricture. Is in the habit of drinking two or three glasses of whiskey daily for periods of several weeks at a time, after which he will totally abstain for a corresponding period. Has never been in the habit of drinking to excess and has not used tobacco except for occasional chewing. Has usually been a healthy vigorous man up to the time of his present illness.

PRESENT ILLNESS : Patient stated that his first trouble began about two months before admission, when he noticed that he was feverish, held his head up with difficulty, lost his appetite, had severe frontal headache. This has been practically persistent since onset of trouble. He was dizzy at times. His arms and hands felt as if they were asleep. He had sensations of numbness throughout the whole body. No epistaxis. At this time patient began to have a series of chills which came on whenever he was exposed to cold and at indefinite times of the day. These chills were severe shaking rigors, and were followed by heavy sweats. Patient also had night sweats. For several weeks he has had a dry cough, at first painless but later, accompanied by painful sensations in different parts of the body ; expectoration considerable, but not blood stained. Has been feverish at times since onset of disease and is constantly thirsty. No appetite, eating followed by nausea and vomiting. During this period has had definite attacks of rheumatism in knees, shoulders, elbows and hands, one knee especially involved, the other not swollen or painful.

Soon after the onset of these symptoms, patient entered the Charity Hospital, Savannah, Georgia, where he was treated for syphilis. Patient remained here for about a month when he left because he thought the mercury and iodides which he took upset his stomach. He was somewhat improved, however, and went to Richmond, Virginia, where he worked at the Soldier's Home. At this time the chills, followed by fever and sweating, became a very marked symptom of his disease and at Richmond he was treated for malaria and took large doses of quinine. He felt weak, had no appetite and was frequently feverish, had pains in different parts of the body and was utterly unfit for any active exertion. He remained in Richmond for several weeks and then came to Baltimore and was admitted to the Johns Hopkins Hospital.

On questioning, patient stated that he had had an acute attack of rheumatism (?) in the right leg and knee which came on abruptly two weeks before admission. He gave no history of attacks similar to gall stone colic and no history of attacks of jaundice at any time. Bowels were irregular, much constipated; appetite very poor. Patient has not eaten a good meal for over two months, is able to retain only soft eggs and milk. Micturition normal.

CONDITION ON ADMISSION: Complexion sallow; conjunctivæ faintly yellow; no cyanosis or dyspnoea; lips and mucous membranes of good colour; patient looks decidedly sick, is dull and slow-minded, but answers questions rationally. Tongue is slightly coated, breath very offensive; a few greyish spots on the posterior wall of the pharynx; no ulcers on membrane. Pulse slightly dicrotic, large volume, low tension. Patient has a distinctly typhoidal appearance.

LUNGS: A few fine râles at the end of inspiration in both upper lobes. Heart sounds clear; abdominal examination negative. Liver not enlarged; spleen not palpable. Abdomen soft and full, tympanitic on percussion, but not distended, no tenderness and no foreign mass to be felt; no rose spots.

The right leg is much enlarged, the tissues of the calf being swollen and indurated, the superficial temperature is elevated, there is considerable tenderness on palpation. About the middle of the calf is a ridge-like swelling, hard and sensitive, just below the line of the popliteal vein. In the popliteal space the tissues are swollen, œdematous and tender, there is much induration over the course of the popliteal artery and vein. The whole leg is swollen and œdematous pitting on pressure the circumference of right calf measuring 4 c.m. greater than the left.

COURSE OF DISEASE: The patient's temperature on admission was $102\frac{2}{5}^{\circ}$. It rose immediately to 104° and then to $105\frac{2}{5}^{\circ}$, when the patient had a hard shaking chill. It dropped again to 103 and rose to 105, and at this time the patient was covered by a most profuse perspiration. His temperature now gradually fell to $101\frac{6}{10}$. During the night the patient's temperature was very irregular and fell from $102\frac{9}{10}$ at 8 o'clock the day of admission, to normal at 10 o'clock and to 97 by the afternoon of the second day. During this time the patient looked considerably upset, the sweating was profuse, rendering a constant change of garments necessary.

There was no increase of the slight yellow tinge of the skin and conjunctivæ which had been noticed on admission and no pain in any part of the body. The spleen could not be felt, the liver was not enlarged, there was no tenderness over the gall bladder. The swelling and tenderness in the popliteal space had not increased, and if anything was slightly less than on the previous day.

The leucocyte count was 7300 on March 5th, the day of admission, and 7500 on the 6th. Fresh specimens of blood examined repeatedly for malarial parasites were absolutely negative, even though they were taken before, during and after the chills. The examination of the sputum was likewise negative. The differential blood count on March 7th, showed a great increase of polynuclear leucocytes, over 90% being of this variety.

During the afternoon of the second day the patient had a very hard shaking chill, lasting for nearly an hour; his temperature rose rapidly from 97 to 102°₁₀, after which it fluctuated for a degree or two for about four hours, when it reached 104, and the patient had another severe shaking chill. Both chills were followed by the same profuse sweating as was noticed on the previous day. His temperature now dropped from 104 at 10 p.m. to 102 at 2 p.m. and to 96°₁₀ at 4 p.m.

For the next few days patient's condition remained practically unchanged. He continued to have slight irregular elevations of temperature, but no shaking chills and no attacks of profuse sweating. The diagnosis of the convalescent stage of typhoid fever with thrombosis of the popliteal vein was made provisionally by Dr. Osler.

On the 4th day the patient had a severe pain in the left side of the chest and on auscultation there was a well marked friction rub in this area. The blood gave a positive Widal reaction in dilutions of 1—10 and 1—50. This reaction was always given by the blood of the patient from entry throughout his entire illness. On a number of occasions the reaction in dilutions of 1—100 was very rapid and perfectly characteristic.

On the 5th day the patient had another severe shaking chill, the temperature rising from 98 to 101°₁₀ and to 102°₁₀, after which for half the night it remained at this point, then suddenly dropped, reaching 95° the following afternoon, a fall of nearly 7½° in 14 hours. This chill was accompanied as well by profuse sweating and great constitutional discomfort.

THE URINE was turbid with a trace of albumin and a good many pus cells. Cultures gave a pure growth of typhoid bacilli, the organisms being typical, giving positive reactions on culture media and with the blood of patients suffering from typhoid fever. The administration of urotropine was begun a few days after admission with the result that after its administration the number of colonies from a given quantity of urine, gradually diminished, but at no time was the urine free from the typhoid bacilli.

The blood examination during this period was quite interesting. Although fresh specimens were examined constantly, both by day and night, and during and between the chills, there never was the slightest

evidence of the presence of any of the parasites of malarial fever although the recurrence of the chills and their irregular type led to the suspicion that we were dealing with a case of æstivo-autumnal malarial fever, and although the patient had been exposed to the different forms of malaria while living in southern countries.

The leucocyte counts were generally between 7000 and 8000 with the beginning of the chill. During the height of the fever the leucocytes would rise to 17,000 or 18,000, and frequently to 30,000, the increase being entirely due to the polymorphonuclear elements. Practically every rigor was accompanied by such a leucocytosis. The red blood count was 3,596,000, the hæmoglobin 65%.

The physical condition of the patient changed but little, the friction rub on the left side increased and the pain in this region became more marked; the spleen became palpable, very low down, the border round and soft, the area of splenic dulness much increased. The patient developed no rose spots and no jaundice and had no other symptoms of typhoid fever. The induration and swelling in the right calf in the popliteal space rapidly diminished and the patient was able to move his leg with considerable freedom. It was Dr. Osler's opinion that we were dealing with a case of typhoid fever with thrombosis.

On the 8th day at 10 p.m., the patient's temperature which had been 102°_{10} , dropped suddenly to 100, and he was attacked by a most violent rigor. The temperature rose immediately to 105°_{10} , and fell in five minutes to 96°_{10} , a drop of 9° . With this sudden fall there were most profound discomfort and general prostration; the temperature remained subnormal for only two hours, after which it rose to 99°_{10} . It fluctuated about the normal for the next two days. Blood cultures were now taken both anærobically and aerobically with negative results, but as we have said, the typhoid bacilli remained in the urine and the Widal reaction was positive.

On the 11th day the patient had another chill with a sudden rise of temperature and fall to 2° below normal, and now for several days the patient's condition remained practically unchanged. He had chills irregularly and unexpectedly at different times of the day and night, they were not, however, so violent in character nor accompanied by such great prostration; between the chills the temperature became persistently subnormal and remained so up to the day of his death.

The patient's physical condition rapidly deteriorated, weakness became more marked, mental condition decidedly unfavorable, he answered questions rationally, though it was with great difficulty he could be got to answer at all. Emaciation was profound, appetite completely lost without vomiting; there was no increase of the slight jaundice noticed on admission, in fact at times this jaundice seemed to disappear.

The blood condition was not changed, the leucocytes remaining normal between the rigors. At this time a curious attack of respiratory distress was noticed by the attendants, and the patient became very difficult to manage; he constantly complained of great pain located in the chest or abdomen, and was markedly short of breath. The examination of the chest was quite negative.

Patient became quite unruly, refused to have his temperature taken, and refused to take medicine or food; was not actually delirious, but always somewhat confused. He gradually grew worse, and his unfavorable symptoms became more marked.

On March 22nd, 17th day after admission, the patient, whose temperature had been subnormal for five days, suddenly had a shaking chill, temperature rising from 98 to 102°₁₀, afterwards dropping to 99. He had no further chills after this, his temperature persistently remaining subnormal. On the night of this day the patient was exceedingly uncomfortable, very restless, suffering greatly from dyspnoea and constantly sitting up, moving about and trying to get out of bed. He was controlled with considerably difficulty by the nurses and orderlies. The respirations were labored, both inspiration and expiration greatly prolonged. On examination there were a few moist râles over both lungs,

The jaundice now became very marked, the skin and conjunctivæ were deeply tinged and had a yellowish brown color. The edge of the liver became palpable and there was some tenderness below the right costal margin. The pulse was very soft, quite irregular and easily compressible, not accelerated.

From this time the patient rapidly went to pieces, the most marked feature being the persistent irregularity of respiration and the constant dyspnoea; the inspirations became very prolonged and the expiration correspondingly so, both were noisy and could be heard almost to the other end of the ward. The examination of the lungs remained negative. The spleen increased in size, its border was soft and round; the liver was slightly palpable. Otherwise physical examination was negative.

On the 20th day the patient was much worse, the jaundice greater with some cyanosis; respirations were of the same character, the inspirations again being very deep and accompanied by a groan. The patient became quite unconscious, not replying to questions. There was some tenderness over area of gall bladder and there seemed to be a little enlargement at this point. Radial pulse uncountable, heart beats, 21 to the quarter, respirations 25 to the minute. The blood at this time was quite negative for any foreign parasites, the leucocytes were markedly increased, the count being 25,000, many showing areas of fatty degen-

eration. The fresh blood under the microscope showed the presence in considerable numbers of long actively motile bacilli similar to the typhoid organisms. Cultures from the blood seemed to be negative, but tubes kept in the incubator for a number of days showed eventually an extremely aberrant form of the typhoid bacillus which after transplantation on to fresh culture media assumed its normal characters. The thrombus in the right leg had by this time practically disappeared.

The patient died on March 25th after a period of great restlessness and delirium. The jaundice greatly increased and a slight lateral nystagmus of the left eye developed.

During the stay of the patient in the hospital he had in all ten very profound rigors accompanied in all cases by a rise and then a sudden fall of temperature, pronounced sweating and constitutional disturbance. Besides these rigors he had almost daily attacks of chilliness and chilly sensations and at no time was he free from sweating, the skin being always moist and covered with a clammy perspiration. Cultures from this sweat failed to reveal the typhoid bacilli.

The autopsy was performed by Dr. MacCallum the day after death. The following anatomical diagnosis established. Typhoid fever with healing ulcers in the lower part of the small intestine; an acute splenic tumour with a number of infarcts; chronic aortic endocarditis; chronic diffuse interstitial nephritis; slight broncho-pneumonia; adhesions between diaphragm, left lung and spleen and small sub-pial hæmorrhages in the left frontal region in the brain.

The lesions of the intestine were limited to the region of the ileo-cæcal valve where there were a dozen nearly healed ulcers with slightly indurated bases, the ulcers being quite characteristic of typhoid fever.

The spleen was large, soft and pulpy. On its removal from the body it crumbled to pieces and was eventually removed piecemeal. The liver was not enlarged. Gall bladder not distended.

There was no pigmentation of the brain or of the viscera, either abdominal or thoracic, no lesions at all characteristic of the fevers associated with the plasmodium of Laveran were found in any part of the body. The cultures at autopsy showed a general infection by the typhoid and colon bacillus, a staphylococcus peritonitis and pleuritis.

The autopsy findings in this case demonstrated that the clinical symptoms noted were due entirely to the lesions of typhoid fever, but it is rather difficult to explain the manner of association between the symptoms and the pathological changes.

The occurrence of chills in typhoid fever is usually ascribed to the complications or accidents of the disease, especially those graver and more serious complications like cerebral thrombosis and hæmorrhages, and intestinal perforation.

Johnson, of Washington, has recently called attention to cases of typhoid fever in which rigors were present both at the onset and in the course of the fever. The case here reported may be allied to such cases, but it presents as well a number of other interesting features. The rigors were in all instances very severe. The rise and fall of temperature was most abrupt, each fluctuation being accompanied by severe shaking chills and profuse sweating. In one instance the temperature fell in five minutes from 105.4 to 96.2, a drop of over 9 degrees.

Such pronounced rigors are seen only in two conditions practically malarial fever and septicæmia.

The presence of malaria was ruled out both by the constant failure to find the parasite in the blood and the lack of any lesions at autopsy associated with this disease.

We are thus forced to conclude that we were dealing with a case of typhoid fever in which *chills* marked the whole course of the disease or with a case of typhoid septicæmia.

It is quite probable that we were dealing with both. The patient constantly stated that his illness began with chills, fever and sweating and his treatment for malaria at this time testifies to the correctness of this statement. His symptoms while in the hospital were all characteristic of septicæmia and not of an ordinary attack of typhoid.

We should thus be led to conclude that the patient originally had a mild attack of typhoid fever with a few ulcers in the intestine.

The typhoid bacilli remained in the spleen and bladder, developing and multiplying and gave rise eventually to a condition of septicæmia with the typhoid and colon bacilli as the infecting agents. This general infection was the direct cause of death.

Aside from the chills, one's attention was called particularly to several other symptoms which were unusual in typhoid.

THE JAUNDICE noticed on admission never totally disappeared. After death the body turned to a deep saffron yellow, as intense a grade of icterus being present as in obstructive jaundice. No obstruction to the flow of bile could be elicited at autopsy and no catarrh of the finer bile passages.

The jaundice was thus *hæmatogenous* in origin, belonging to that obscure group which is exciting so much attention from pathologists at present.

THE BLOOD showed a normal white count at all times except during the rigors when the leucocytes rose to 25,000 and 30,000. This high leucocyte count was itself quite contrary to all observations on the blood of malarial patients and suggested the infectious origin of the chills.

THE PLEURISY, the advent of which was *unassociated* with a rigor.

persisted from the time of its appearance to the death of the patient. At autopsy there were plastic adhesions between the pleura, the lung and the diaphragm at the point where the pain was felt and the râles heard during life.

THE PERSPIRATION was most marked, quite as evident, indeed, as in the sudoral form of typhoid to which this case bears a little resemblance.

This sweat was highly acid in reaction, but contained no typhoid bacilli.

THE WIDAL reaction was at all times positive, both in dilutions of 1—50 and 1—100.

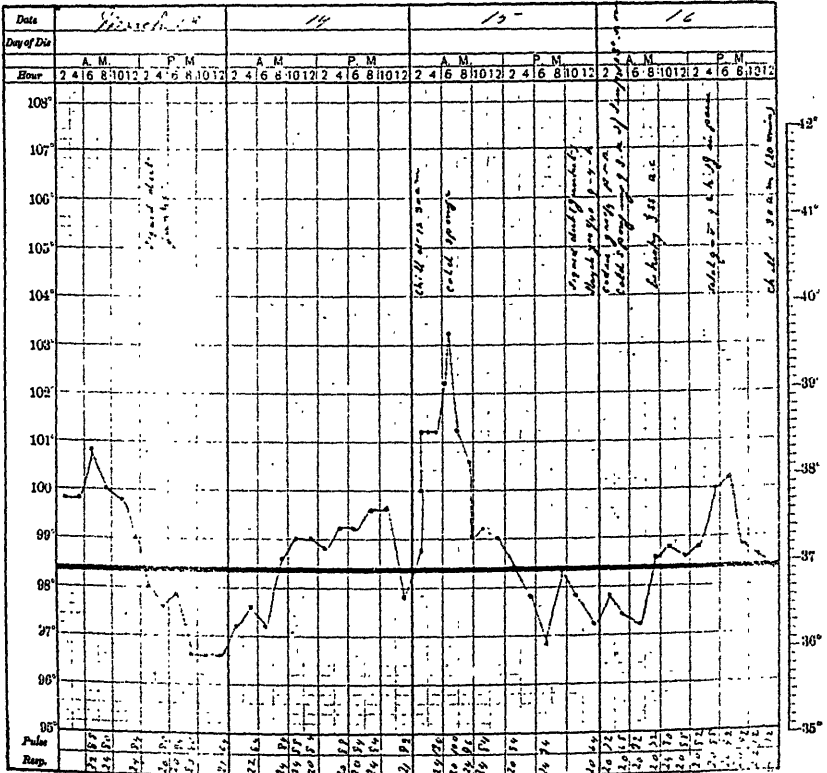
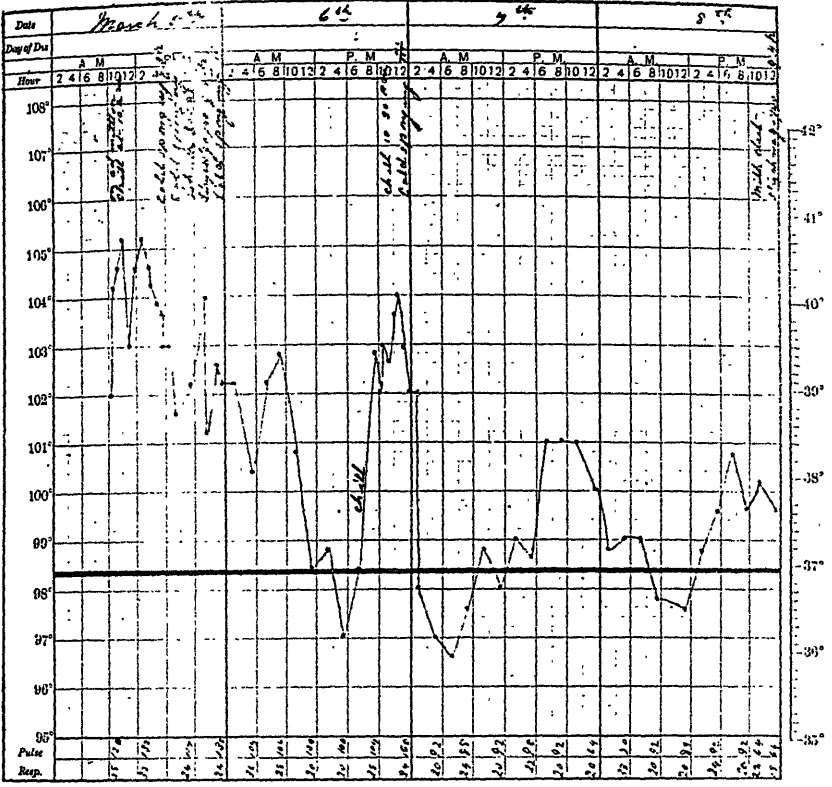
On admission the patient was suffering from CYSTITIS. Cultures from the urine showed the typhoid bacillus, the presence of which in reality made the diagnosis of typhoid fever seem more probable.

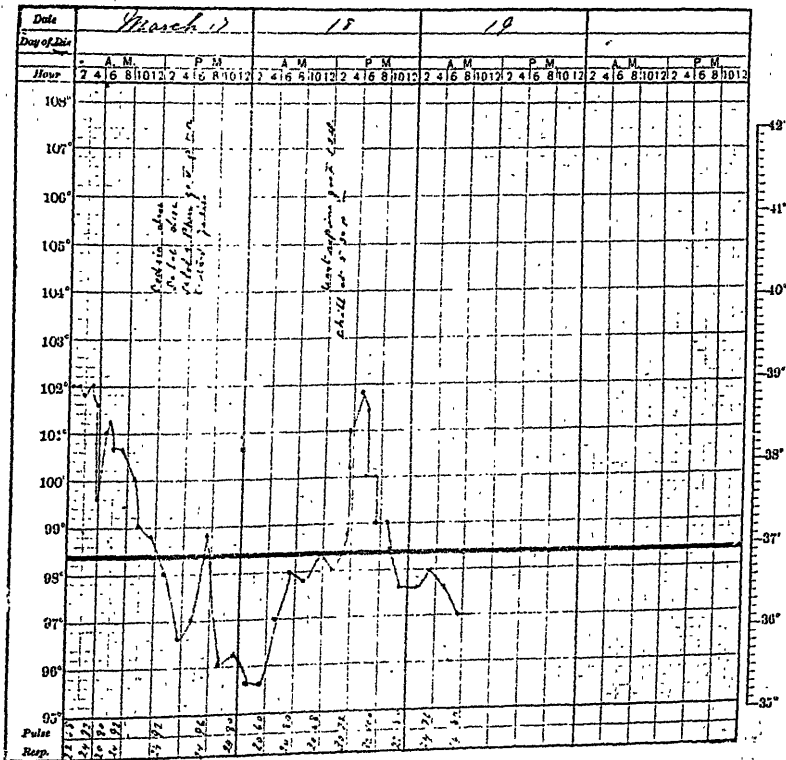
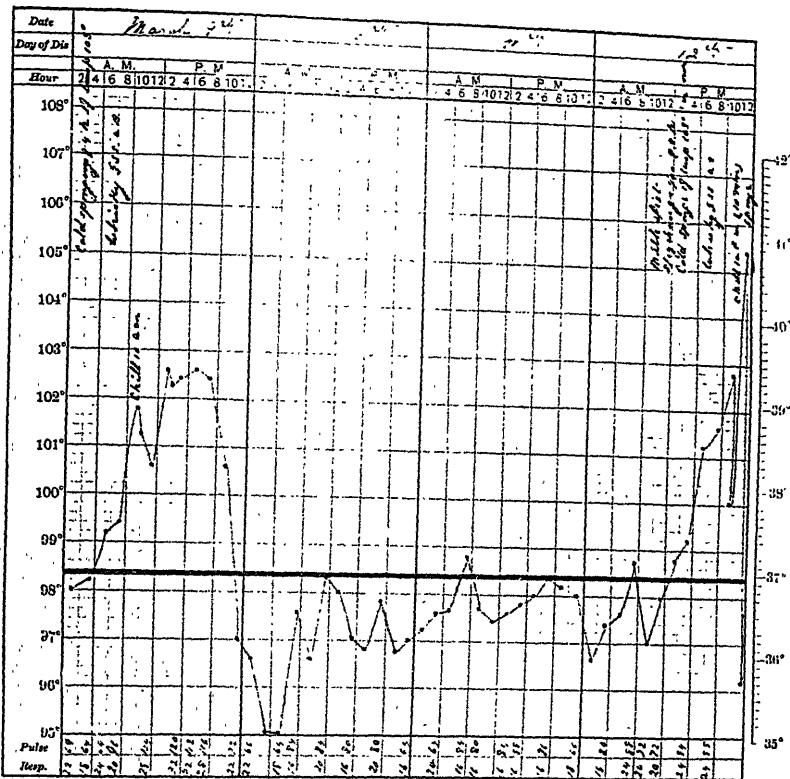
Young, of Baltimore, has called attention to the bladder complications in typhoid fever and has put on record several cases of typhoid cystitis. The cystitis in the present case has already been referred to by Gwynn, of Philadelphia. The typhoid bacilli never disappeared from this patient's urine, although their number was considerably diminished after the exhibition of urotropin.

THE RESPIRATORY DISTRESS was extreme for some hours before death. Dyspnoea was intense, pain in the chest severe, inspiration and expiration prolonged, the former, accompanied by a groan or grunt. This respiratory disturbance lasted for 48 hours before the fatal exit.

FRESH SPECIMENS OF BLOOD examined the last few hours before death revealed the presence in great numbers of long actively motile bacilli dodging about between the elements of the blood. Cultures from this blood at first seemed negative, but as I have stated, the transplantations made at this time, eventually gave colonies of an aberrant form of the typhoid bacillus.

FINALLY THE DIAGNOSIS OF TYPHOID FEVER WITH THROMBOSIS, reached from the positive Widal reaction and the typhoid cystitis, and the diagnosis of septicæmia resting on the observation of bacteria in the circulating blood were both confirmed by the finding at autopsy of definite typhoid ulcers and by the blood cultures at this time which showed the typhoid and colon bacilli.





ON A MONSTER PRESENTING ANTERIOR DUPLICITY.

BY

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The Pathological Museum in McGill University has obtained from Dr. W. H. Macdonald, of Rose Bay, N.S., a very excellent example of the above malformation, and it has afforded to one of us (G. P. G.) the opportunity to make the accompanying skiagraphs showing well the underlying skeletal structure of such monstrosities. The history afforded by Dr. Macdonald is the following :—

His patient, a sickly woman, 21 years of age, was two months pregnant at the time of her marriage, and four months after this event was seized with pneumonia. The illness showed itself upon the Monday, and upon the Thursday of the same week she was seriously ill, having a temperature of 104°. That afternoon labor pains set in, but these were not strong till the Friday afternoon, when they became violent, and the patient was delivered of the foetus; she was then so weak that stimulation with strychnine had to be employed. The membranes did not rupture until the os was fully dilated, and then the two heads came down together. Thinking this was a twin birth, Dr. Macdonald tried to push one head back, but could accomplish nothing. He then felt the small middle extremity, and discovered that the two heads were apparently continuous. The condition was so puzzling that he determined not to interfere for a time, then the pains becoming very strong, he was able to deliver the monster.

The foetus showed no signs of life, and purposely he made no effort to restore it. There was an adherent placenta, and it was necessary to employ currettage; the ensuing hæmorrhage was slight, and the mother made a good recovery. The father was healthy, and but 20 years old. Dr. Macdonald could obtain no previous history of monsters occurring in the families, and the only unusual occurrence the patient remembered was a fright received three and a-half months previously, when she was in the cellar and a cat jumped near her. This clearly had nothing to do with the development of the monstrosity. The patient reckoned herself to be six and a-half months pregnant.

The accompanying illustrations render it unnecessary to give a full description of the foetus. It will be seen from these that the foetus is

well and symmetrically developed, possessing two completely separated heads with cutaneous fusion in the neck region; the outer arms of either fetus are normal and relatively well developed, while there is an imperfect fused median extremity passing upward between the two heads. This median anterior extremity is formed of a single line of bones. As seen by the skiagraph, its axis is composed of a single series of five bones.

While externally there appears to be a single body, the skiagraph clearly demonstrates that here, as in double-headed monsters in general, there is a double vertebral column, even down to the coccyx.

The osseous development, as shown by the skiagraph, consists of ossific centres representing 24 vertebræ and 4 sacral segments on either side of median line forming two complete spinal columns, separated from end to end and diverging from below upwards. From the outer side of each of these spinal columns spring in their normal position twelve ribs extending round the thorax towards the front, but there is no sternum nor ossific centre representing one.

There is a clavicle and scapula in their normal place on the outer side right and left of these ribs, from which an arm is continuous, consisting of humerus, radius and ulna, 5 metacarpal bones, 2 phalanges for thumb and little finger, and three phalanges for each of the other fingers, on each side of the body. Below there is an ilium on either side, and an ossific centre for pubes on either side, a femur, tibia and fibula, one ossific centre for the os calcis, 5 metatarsal bones and 10 ossific centres representing phalanges constitute the skeleton of the leg on either side. Between the two spinal columns, and starting from their usual place in the column, are 12 pairs of rib bones, passing in towards the median line of the back of the specimen, and there united at an angle, —in the 5 lower ribs the point of union is downwards towards the pelvis, the remaining 7 pairs, except the first, have the point of union turned upwards towards the shoulder. The first pair is turned upwards, but not ossified as far as the point of union. The clavicles are here one for either side, and the scapulæ also, but these have scarcely been ossified to the region of contact. These bones support a single fleshy shoulder, whence springs a single arm represented by a single humerus extending upwards between the two heads; at the elbow this arm is bent upon itself towards the left head and down towards the shoulder, representing the forearm by one bone, in place of radius and ulna, at the end of which arm is again turned upwards, gradually ending in a point, in which the carpus, metacarpus, and phalanges are represented by 3 ossific centres. The cranial and facial bones represent about normal development at this early age.

The skiagraph in this case is taken stereoscopically, the two pictures

being taken from points $2\frac{1}{2}$ inches apart, and when mounted in one way show the front view, and when reversed, the back view is seen. Full size pictures are in the museum of Medical Faculty, McGill College, for inspection.

So far as we know, this is the second recorded case of well-developed anterior duplicity occurring in Canada, and it may be well to recall the former, which was described by Dr. D. C. MacCallum, of this city, some 22 years ago (*Obstet. Trans. London*, Vol. XX., 1879, p. 120), and of which our museum possesses the original drawings by Hawksett. These children were born at St. Benoit, County of Two Mountains, on Feb. 28, 1879, and, as Dr. MacCallum informs me, they, or it, died in Sept. 1880, having lived for a period of 19 months.

It will be seen from the illustrations that the duplicity in this case was much greater than in ours, the external union occurring in the lower part of the thorax, the ribs throughout being distinct. It may indeed be laid down that the more complete the duplication the greater the chance of prolonged life in these monstrosities.

Here, as shown by the illustration of the posterior view, there were two pairs of anterior extremities, while the tail-like appearance about the nates was really a rudimentary median lower limb. This measured five inches in length, was provided with a point, and, like the anterior extremity in our specimen, tapered to a fine point, which was furnished with a definite nail.

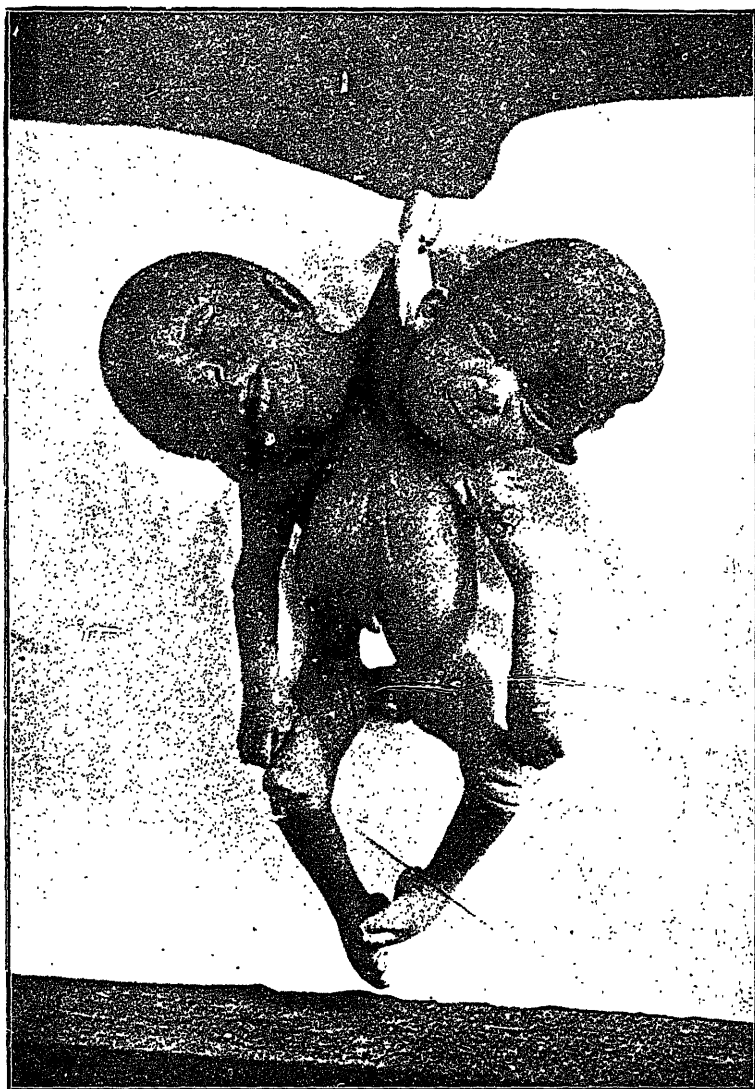
Dr. MacCallum notes in his description that the child to the left of the observer, named Marie, resembled the mother, had a fairer complexion and was of more strong development and healthier looking; the other, Rosa, the smaller, darker and more delicate looking, and resembled the father. The pulsations of the hearts did not correspond; Marie's heart beat at the time of examination 128 per minute, Rosa's 133; nor again were the respiratory movements synchronous. The sensation of hunger was not always felt at the same time; very frequently one child slept while the other was being nursed. When one child cried and the other was tranquil, the abdomen on the side of the crying child contracted and extended, and the limb on that side was agitated, the corresponding parts on the other side being at rest except for a slight and evidently communicated movement of the lateral half of the abdomen on the side of the quiet child; the same phenomena were observed when either child forced during a motion.

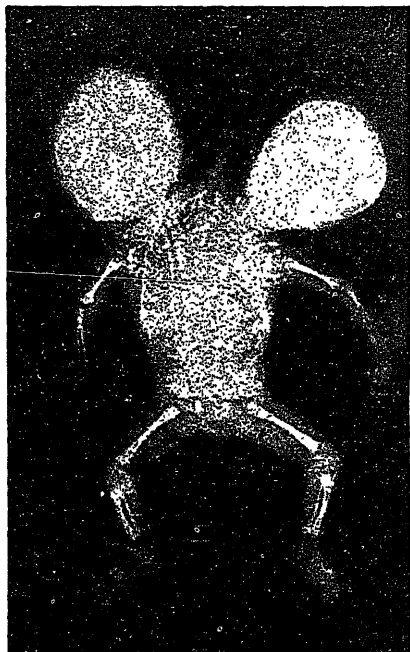
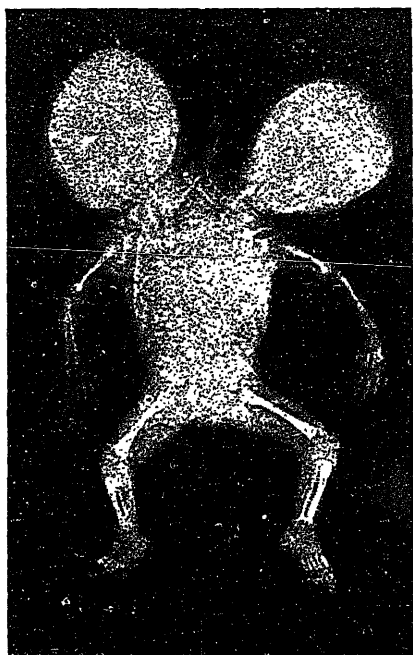
Clearly thus the spinal, circulatory, respiratory and digestive systems of the two children were distinct, the alimentary canal probably opening at a point close to the common anus.

Into the etiology of foetal deduplication, a subject as involved as it is interesting, we will not enter, possibly one of us at a later period will

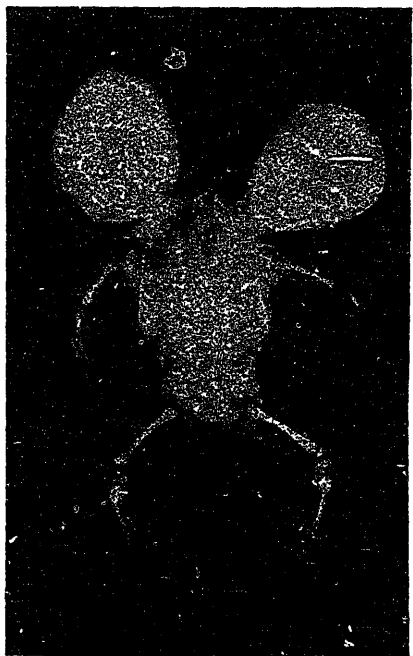
have more to say about it. We will only point out here that while, as Geoffroy St. Hilaire the elder pointed out long ago, it is possible that where two separate fœtuses develop from one ovum, fusion may eventually develop where the two bodies come into apposition, mere fusion cannot explain cases such as those here exhibited. When we consider that we may have the whole succession of forms from those in which there is simply a deduplication of the pineal gland, through cases in which the head is provided with a median eye and two lateral eyes, and cases of janiceps, such as that recently shewn before our Society by Dr. Macphail, through other stages represented by our present specimen and by Dr. MacCallum's case here produced—down to cases like the Siamese twins, in which the band joining the two otherwise completely separate individuals marks the site where a common umbilical cord entered the body, we can only conclude that in the very earliest stages of the development of the ovum, there may be a greater or less bifurcation of the head end of the ovum and the development of a Y-shaped medullary groove, so that in the hinder portion there is developed a single medullary groove with single sets of organs, and anteriorly the organs develop round two growing points.

The numerous experimental researches upon the fertilised ovum of lower animals made during the last few years, tend to prove that this is the case. In other words, such monstrosities must with the rarest possible exceptions be the product of not the fusion of two original separate ova, but of a single ovum which has undergone a division at its anterior pole.

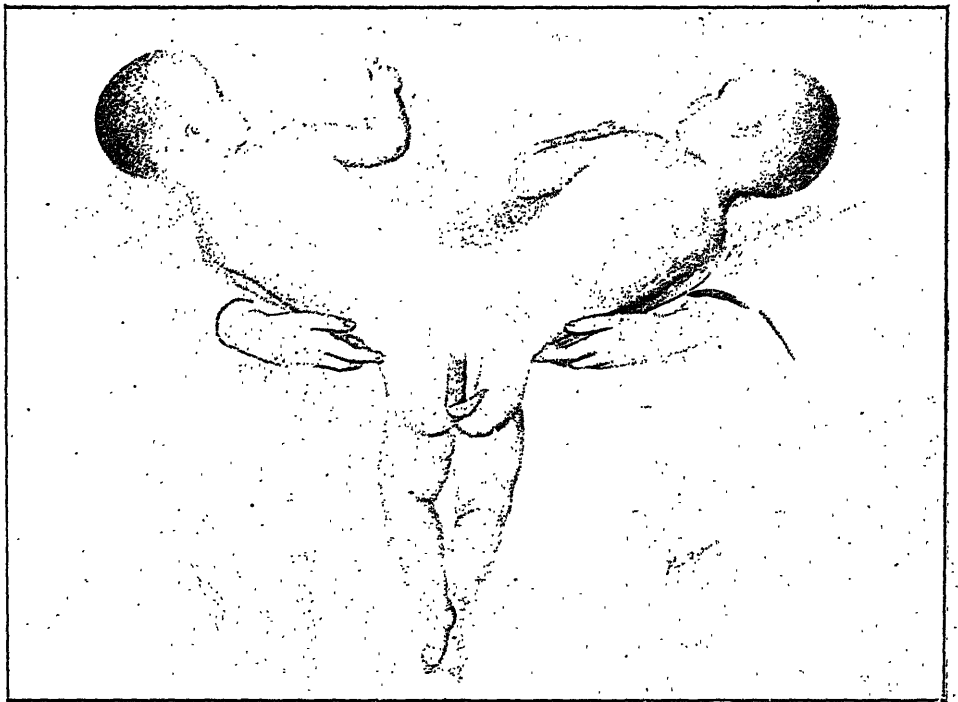
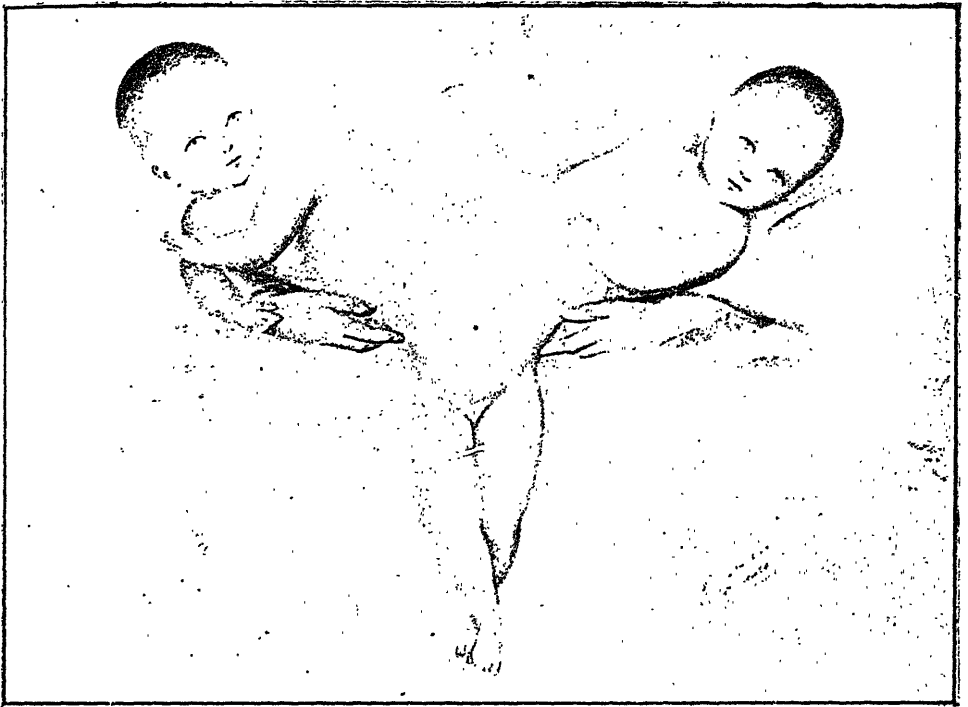




FRONT VIEW.



BACK VIEW.



STEREOSCOPIC VISION.

BY

G. P. GIRDWOOD, M.D., M.R.C.S., Eng.,

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When looking around us, if we have good vision with both eyes, we see surrounding objects in their normal position as regards distance from us, and are able to say that one object is nearer than the other; but if we have only one eye, the other being blind or temporarily covered, the picture presented to us appears flat, and the relative distance of objects is not preserved to us. On investigating this phenomenon, we find that the two eyes are normally about $2\frac{1}{2}$ inches apart from centre to centre, and that we converge the axis of the two eyes on different objects, and thus view the whole picture, the object converged upon being the prominent feature in the picture for the moment, and we really see two pictures, one with each eye, the central object of which is the object on which convergence is made, and that these two pictures are blended by means of the perceptive faculty of the brain, and we see only one picture. The two pictures as presented by the two eyes are not identical, and this may be readily shown by taking two pictures with a lens placed in two positions $2\frac{1}{2}$ inches apart and comparing the two pictures. They will not be tracings one of the other, but the point of convergence will be the centre of each, and other objects will take their place accordingly. This will be easily proven if we place two objects in line with our nose, and alternately converge on the nearer object and the distant one.

If we converge the eyes on the distant object, it will be seen that there are two images of the near object visible, and in like manner, if we converge our eyes on the near object, two of the distant objects will be visible.

If now, whilst converging the eyes on the distant object, and the two images of the near object are both visible, one eye, say the right eye, be closed or covered, the left-hand image of the near object will be obliterated, and if the left eye be closed or covered, the right-hand image of the near object disappears. (Fig. 1.)

Again, if whilst converging the eyes on the near object two images of the distant object are visible, and if, whilst converging on the near object, and the two images of the distant object are visible, the right eye be closed or obscured, the right-hand image of the distant object disappears, and if the left eye, the image on the left disappears.

If now two objects be placed in line with the nose and the eyes con-

verged on the distant object, a card may be held up on the same line so as to obliterate the near object altogether, and the distant object remains visible as one object. (Fig. 1.) But if eyes are converged on near object, two images of the distant object will be seen, and if the right eye be closed or obscured, the right image of distant object will be obliterated, and if the left eye, the left image will be obliterated, and if two cards be gradually pushed in from outside towards the median line, both distant images can be obliterated whilst the near object remains visible. (Fig. 2.)

These experiments show that two distinct pictures are seen by the two different eyes, and that, therefore, to obtain true stereoscopic vision, two distinct pictures must be presented to the two eyes, the left to the left and the right to the right eye.

If, however, the pictures be reversed and the left picture put to the right eye, and the right picture to the left eye, the reverse effect is produced, and the distant object or portion of object appears near, instead of distant. In Foster's Physiology a drawing is given, from which the drawings produced are copied A. In this the foreshortening is given on the inside of the two pictures, and in B, I have reversed the sides; that is, I have put the right picture of A to the left eye in B, and the left eye picture of A to the right eye of B, and now they appear reversed in A. The object when viewed in the stereoscope appears as a solid truncated cone, whilst in B the effect of looking into a hollow truncated cone is produced.

On viewing any of these pictures with the stereoscope, they appear as if seen in relief or as solid objects, because the instrument gives to each eye its proper picture and the brain blends the two pictures into one.

It is quite possible, and most people with a little practice can see these pictures stereoscopically, the centres are placed $2\frac{1}{2}$ inches apart, and if held opposite their respective eyes, and the axis of the two eyes be made parallel, each eye will see its own picture, and the brain will blend them together. On looking at one of these pictures with the eyes parallel, that is, converged on infinity, three pictures will be seen, a central picture which appears solid, and a picture on either side which appears flat and wanting in solidity.

If whilst looking at one of these cards and seeing the three pictures, a card be passed up between the eyes, it will be found that the two outside pictures are cut off but the central one remains visible and appears solid.

If when looking at the card and the three pictures are visible, either eye be obscured, the centre solid object becomes flat and loses its rotundity and the third image on the side opposite to the obscured eye is lost.

If when looking at the card and the three pictures are visible, the card be altered in its horizontal level so as to raise one picture above the

other, the centre picture no longer appears solid, but is seen to consist of two images, which move as the level is altered.

From these experiments it is clear that when the card is looked at with the axis of the two eyes converging on infinity, in reality an image of each drawing is seen by each eye, so that in reality there are four pictures presented to the brain, but the two which are opposite to the respective eyes are blended into one solid object, by the brain, and the other two pictures are seen by the respective eyes to the inside of the picture which is opposite to the eye, and hence when the card is placed between the two eyes it is the two lateral pictures which are cut off, and the central solid object is still seen.

The practical use of these observations is that if a picture be taken stereoscopically and mounted so as to have left picture opposite left eye and right picture opposite right eye, the solidity will appear as correct from the point of view taken, but if the pictures be reversed, the view appears to be from the opposite side. And if the eyes can be practiced to look straight before them, that is, parallel axes or even a little divergent, and an object be placed before one eye and a blank sheet of paper before the other eye, it will be perfectly possible with a little practice to draw on the blank sheet with one eye what is seen with the other eye; hence it is possible to look down a microscope with the left eye and draw on a sheet of paper by the side of the microscope with the right eye what is seen by the left; and in like manner, if a mark be made on a piece of paper opposite the left eye, and looked at stereoscopically, that is with paralleled vision, a line can be drawn on the paper exactly under the line seen by the left eye which will be found to be $2\frac{1}{2}$ inches apart from the first line, a second and a third, or as many as are desired can be drawn equidistant.

In skiagraphy the advantage of these observations is that a picture may be taken stereoscopically, and by reversing the picture a view of both sides may be obtained as the parts, even the bones are so largely transparent.

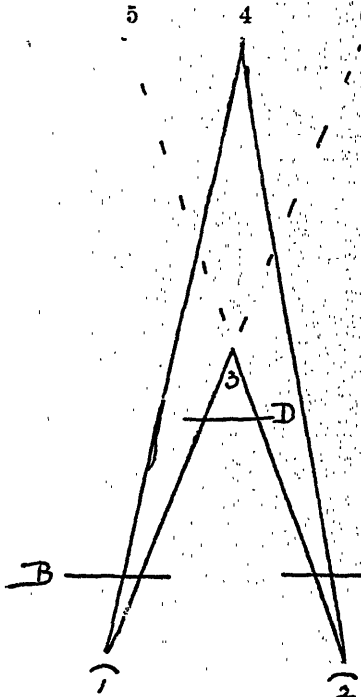


FIG. I.

1 and 2 are eyes, $2\frac{1}{2}$ inches apart, 3 a near object, 4 a distant object in line with the nose, convergence of eyes on distant object 4, 2 images of near object are visible as at 5 and 6. Card placed at A cuts off 4 and 5 from 2, leaving 4 and 6 visible by 1, if card placed at B, 4 and 6 are cut off from 1, but 5 and 4 are visible. Card placed at D cuts off 5 and 6 but 4 is visible to both eyes.

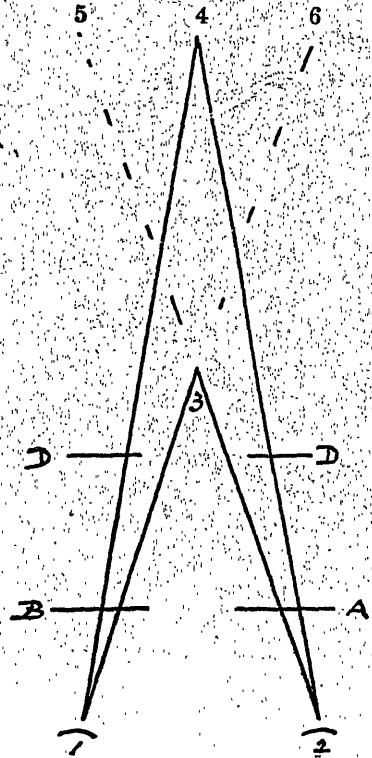
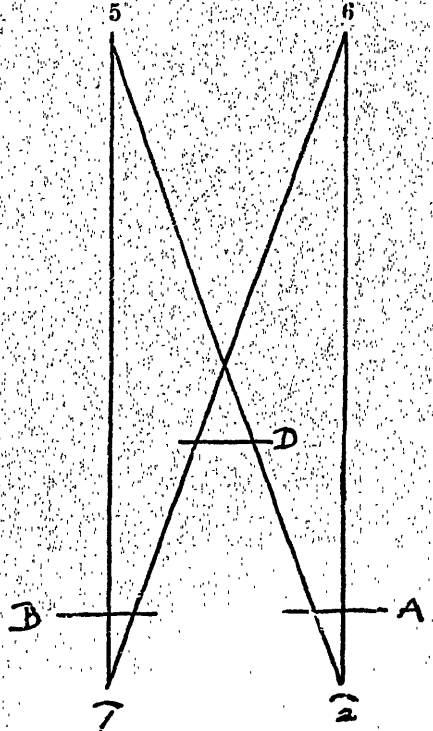
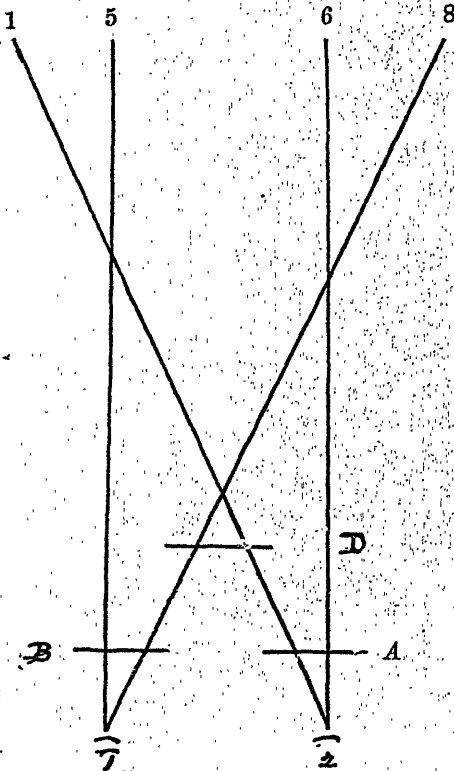


FIG. II.

1 and 2 are eyes, $2\frac{1}{2}$ inches apart, 3 a near object, 4 a distant object in line with nose. Eyes converge on 3, two images of 4 are seen one on either side of 3. Card placed at A, 4 and 5 will be cut off from 2, if at B 4 and 6 will be cut off from 1, if 2 cards are held at D, 4 will be cut off from 2, or 4 will be cut off from 1, whilst 3 will be seen by both eyes.



1 sees 5 opposite to itself and 6 as at 8. 2 sees 6 opposite to itself and 5 as at 7. Brain puts 5 and 6 together in middle and solid. Card at A cuts off 6, making middle picture flat, and cuts off 5 as seen at 7. Card at B cuts off 5 making middle picture flat, and cuts off 6 as seen at 8. Card at D cuts off the images of 5 and 6 as seen at 7 and 8, whilst 5 and 6 are seen by 1 and 2 respectively and are seen as a solid object.

1 and 2 the two eyes, 5 and 6 the two pictures opposite the eyes. 1 sees 5 opposite to it and also sees 6 to the inside or right side of it. 2 sees 6 opposite to it and also sees 5 to the inside or left side of it. The Brain puts 5 and 6 together solid and in the middle, 5 is seen by 2 to the left of the conjoined figure and 6 is seen by 1 similarly to the right of conjoined picture. Card at A cuts off 6 and 5 from 2, at B cuts off 5 and 6 from 1. At D cuts off side pictures of 5 and 6 from opposite eyes 2 and 1, but 5 and 6 are seen solid around the edges of cord.

THE SEGMENTATION OF THE HEAD.

BY

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Of the many great problems of animal morphology and anatomy, none at all times have proved of such interest as that of the segmentation of the head.

Of how many segments is the head composed ?

Since the time of the celebrated French naturalist, Savigny, we have all acknowledged the contentions he so clearly enforced regarding the nature of segmentation. We see plainly how the body of a vertebrate is made up of segments which obey Savigny's law just as correctly as do those of a lobster, grasshopper, or a worm.

Is not the head simply the modified anterior end of the body and as such similarly segmentally constructed ? This was the question which confronted the early morphologists of this century.

The honor and the merit of being the first to offer a solution of this question has had, like all great discoveries, numerous claimants among which I may briefly mention Vicq d'Azyr, Burdin, Heilmeyer, Goethe, and Oken.

It is not the purpose here to examine or endeavour to settle in any way the relative merits of these various claimants, further than to select, by way of commencement, Oken's graphic account of his discovery of it.

One day in the autumn of 1806, he was rambling through that beautiful Harz forest, the birthplace of so many mythical and romantic ideas, when he accidentally struck his foot against something half-buried in the fallen leaves. On examination he found it was the broken skull of a sheep. It was broken either by accident or decay in such a peculiar fashion as to present the appearance of being made up of a series of bony rings or segments.

Turning it over with his foot as it lay among the leaves, the idea suddenly flashed across his mind that the skull was nothing more or less than a series of bony rings representing modified vertebræ. He tells us with what haste and anxiety he hurried home to apply and work out this thought. The following year being chosen professor extraordinary in the university at Jena, he took as the subject of his address, "The significance of the cranial bones." Here, in full, he stated his views for concluding that the skull is composed of three modified vertebræ, "the eye," "the jaw" and "the tongue" vertebræ, as he named

them. Each head vertebra similar to a trunk vertebra consisted in his opinion of several parts,—a body, two arch pieces, and a dorsal spine. He believed this composition was most easily recognizable in the last cranial vertebra or occipital bone; here the basal part was comparable to the centrum or body of the vertebra, the condyloid parts to the lateral arches, the superior part to the vertebral spine. The second cranial vertebra was to be discerned in the body of the posterior portion of the sphenoid bone, which together with its greater wings and the two parietals, forms the second bony ring around the brain. The third cranial vertebra was constructed out of the anterior part of the sphenoid bone, together with its lesser wings and the two frontals. Any bones which he found would not fit in with this scheme, he discarded as of no

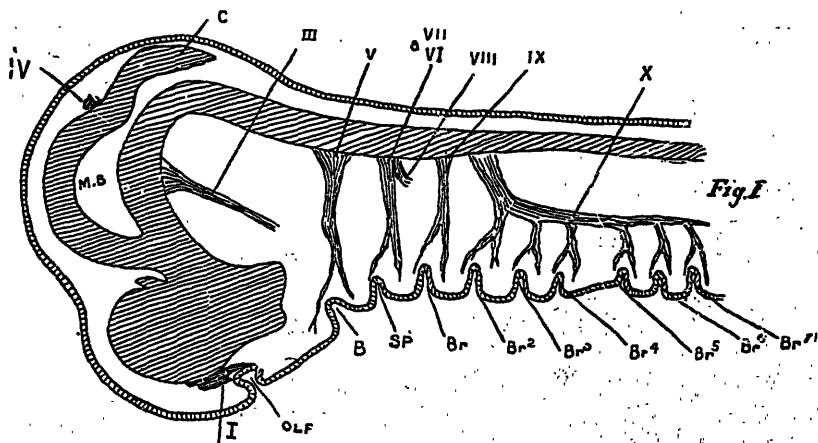


FIG. I. A diagrammatic view of the head of a young vertebrate embryo from the left side, showing the several segmental nerves and their relations to the visceral clefts. (Modified after Milnes Marshall.)

I, II, III, &c.—Cranial nerves.

B.—Mouth.

Br¹—Br⁷.—Gill slits.

Sp.—Spiracle.

Olf.—Olfactory pit or cleft.

M.B.—Mid-brain.

C.—Cerebellum.

importance, in part to be associated with the organs of special sense as sensory bones in part comparable with the ribs of the thorax.

Oken's views became universally popular. Diagrams showing his manner of regarding the origin of the head bones were in every text book, and frequently in our museums to-day we run across collections of skulls divided into these three vertebrae, which have been handed down from the lecture room of Oken's time, attesting not only the former popularity of his theory, but also its original genius. In fact, any anatomist of those times who wished to be considered as amounting to anything, had to publish his particular version of the matter.

So Bojanus and Richard Owen regarded the skull as formed of four

vertebræ; McClise as formed of six; Geoffroy St. Hilaire as formed of seven, while Spix, Meckel, Burdach, Carus and Johannes Mueller agreed with Oken in considering it as formed of three modified vertebræ. Even so late as 1870, Stieda published a paper in the celebrated "*Zeitschrift für wissenschaftlichen Zoologie*," in which he accepts Oken's theory of the skull.

But comparative anatomy could never satisfactorily point out which bones were to be regarded as modified parts of vertebræ and which were not. With increasing knowledge and insight, Oken's views came gradually to be abandoned as erroneous and defective. In the work of the anatomist Stannius, this problem of the head enters a new phase.

Stannius brought the visceral or branchial skeleton into the problem, and said the segments of the head were not so much to be explained by the bones of the head and the cranial nerves, as by the *visceral arches* or gill clefts. Before this the anatomists of the Oken school had all tried to reduce the cranial nerves in such a manner as to make them come off from the three or four vertebral segments, into which they regarded the skull as divided, in a manner similar to the manner in which the spinal nerves come off from their respective vertebræ. This led them into all sorts of difficulties. For instance, Stieda, whose paper I have just mentioned, following Oken in regarding the head as formed of three segments, had trouble in bringing his sixth or abducent nerve into proper order; do what he would, it did not fit in right with the other nerves. It never seems to have occurred to him that in trying to arrange the 12 cranial nerves to come off properly from these three head vertebræ, he was as it were forcing matters. To straighten out things he simply regarded the abducent nerve as a branch of the trigeminal or fifth. This, perhaps, was not so bad, but when he went on to regard the motor ocular (third), the trochlear (fourth), the abducent (or sixth), and the great facial (or seventh), as all branches of trigeminal or fifth, whose present separate origin from the brain was a matter of no importance, merely a secondary acquired feature, we realize the bad and very unscientific influence this Oken theory was exerting upon anatomy.

Stannius, in concluding his great treatise on the peripheral nervous system of the bony fishes with the following words: "Hence it follows that the number of the vertebral branches of each cranial nerve and the number of spinal like (segmental) cranial nerves is not to be determined so much by the number of skull vertebræ, as by that of the visceral arches,"—conferred on modern anatomy one of the greatest blessings, in paving the way in the right direction for greater discoveries. "If he had but gone one step further, had he been able to completely disabuse his mind of this notion of the skull vertebræ, which had already caused so much error, he would have anticipated by

more than 20 years Gegenbaur's great announcement of that theory of the vertebral skull, which has since, with some slight modifications, been almost universally accepted."

The Oken theory, however, lived on to receive its final death-blow at the hands of Professor Huxley in his Croonian lecture before the Royal Society in 1858.

Here Huxley pointed out that the problem really includes two separate and distinct questions:—"First are all vertebrate skulls constructed on the same plan? Secondly, is such a plan supposing it to exist identical with that of the vertebral column?" The fact that the skulls of all vertebrates are constructed on the same plan by no means affirms that it is in any way formed from modified vertebræ. Huxley attacked the problem from a double stand point, first by a careful comparison of the various anatomical features presented by typical vertebrate skulls, he came to the conclusion that there is a common plan of construction to be discerned in these skulls, second by studying the development and earliest embryological appearance of the bones composing the skull, he found that in no possible manner could these be regarded as derived from modified vertebræ, except that in their earliest beginning they both start from the same primitive condition—a common central plate with its dorsal and ventral laminae;—whence they immediately diverge more and more as development proceeds.

"The spinal column in all cases becomes segmented into somatomes; and in the great majority of cases, distinct centra and inter centra are developed, enclosing the notochord more or less completely.

The cranium never becomes segmented into somatomes; distinct centra and inter centra, like those of the spinal column, are never developed in it. Much of the basis cranii lies beyond the notochord.

In the process of ossification there is a certain analogy between the spinal column and the cranium, but the analogy becomes weaker and weaker as we proceed towards the anterior end of the skull.

Thus it may right to say, that there is a primitive identity of structure between the spinal or vertebral column and the skull; it is no more true that the adult skull is a modified vertebral column, than it would be to affirm that the vertebral column is a modified skull."

It is interesting to note that the facts upon which Huxley laid stress in 1858 as arguments against the vertebral origin of the skull have become with the advance of embryological science at the present day our strongest arguments in favour of it, though in a somewhat different sense. For we now know that there is a primitive segmentation of the cranium similar if not identical with that of the spinal column. But we have also found that this segmentation has little or nothing to do with the formation and ultimate arrangement of the bony elements either

in the head or the spinal column. In fact structures so late in phylogenetic appearance as the bony elements could not be expected in Huxley's opinion to furnish evidence of sufficient value to be of any use in determining the primitive condition in which the head might have been segmented. Huxley's arguments proved conclusive and from this on we hear no more of the "vertebral archetype" or the system of mystical and transcendental anatomy so popular in the early part of the century.

In 1871 appeared Gegenbaur's great work which has formed the foundation of all subsequent work. As Huxley's work had as its object the destruction of the main contentions of the Oken school, having accomplished this he went no further. It remained then only for Gegenbaur to put the finishing touches on what Huxley had done, completely reversing the order of procedure of the Oken school; setting to work by taking the visceral arches and nerves and determining from them the number of head segments, so replacing the old vertebral theory of the skull, demolished by Huxley with the modern theory of the segmentation of the head. And although Huxley had outlined this procedure before him, somehow or other the whole credit has been given to Gegenbaur. In fact, Gegenbaur in this paper advanced hardly anything which is not also to be found in Stannius or Huxley, except an attempt to rank the labial cartilages of sharks as gill arches, a theory which now, hardly holds water. He also pointed out, that, from the fact that the vagus or tenth nerve supplies more than one gill arch (in fact in the form he studied, it supplied five gill arches) we were, therefore, to conclude that the vagus represented a fusion of a number of primitively distinct nerves, a result which has since been confirmed from many independent sources, but the gist of this is, perhaps, to be found in Stannius. Probably the greatest good done by Gegenbaur was his pointing out that if the Oken theory of the vertebral origin of the head bones were true, then in the very lowest fishes we should naturally expect to find the most simple conditions of affairs,—on the contrary in these fishes we find the cranium actually a solid case from end to end without the faintest traces of segmentation into vertebræ. Further, that in the higher vertebrates, even in the embryo, the basis of the skull is laid down in a perfectly unsegmented and continuous sheet of cartilage, which becomes folded up around the brain vesicles gradually enclosing them and the organs of special sense, completing a primary skull perfectly unsegmented; that after this a secondary skull is formed outside this primary cartilaginous skull, by the sinking in of dermal bones or scales from the surface of the skin; that, after this secondary skull is formed, parts of the primary cartilaginous skull are absorbed, the unabsorbed parts becoming ossified and fusing with the secondary or dermal skull. So the second-

ary skull, with what remains of the primitive skull which has become ossified, constitutes the actual skull of the adult. It remained only for Gegenbaur's celebrated pupil, Froriep, to add that in the Mammals at least, the skull has gradually increased in size at the expense of the neck by the absorption of true vertebræ corresponding to the segments of which the hypoglossus represents the nerve. To this day we have nothing further to add so far as the bony skull is concerned.

Below is a table taken from Gegenbaur's paper regarding the segmentation of the head as summarized by him. You will see that he only takes into consideration as of segmental value four of the cranial nerves, leaving out the olfactory, the optic, and the eye muscle nerves, also the auditory, and the eleventh and twelfth; you will see he distinguishes in all, nine head segments.

TABLE OF HEAD SEGMENTS ACCORDING TO GEGENBAUR.

Primary Visceral Skeleton.	Modified Visceral Skeleton.	Nerve.
1st Arch.	First Upper Labial Cartilage.	Trigeminus Ramus 2.
2nd Arch.	2nd Upper and 1st Lower Labial Cartilage.	" " 3.
3rd Arch.	Mandibular Arch.	Facial.
4th Arch.	Hyoid Arch.	Glossopharyngeal.
5th Arch.	1st Gill Arch.	Vagus Ramus 1.
6th Arch.	2nd "	" " 2.
7th Arch.	3rd "	" " 3.
8th Branch.	4th "	" " 4.
9th Arch.	5th "	

After Gegenbaur's time the bones of the head ceased to play any part in the solution of the problem. If I may follow Froriep in dividing the history of the subject into three phases, of which Oken's theory forms the first phase, then Huxley's and Gegenbaur's works will complete the second phase. We enter the third phase, which is that of the present day, with the work of Balfour, Marshall, Beard, Goette, Van Wijhe and Froriep. Here two new elements make their appearance. Balfour was the first to point out that the primitive body cavity extends up into the region of the head, there becoming segmented into a series of pockets, one for each segment, similar to its segmentation into

pockets in the segments of the trunk. This forms an important point of agreement between head and trunk; thus the head becomes similarly segmented to the trunk at a time when the first traces of a vertebral column, or head skeleton, have not yet made their appearance, and even before the medullary groove has closed.

Again Balfour made the interesting discovery that the dorsal or sensory roots of the spinal nerves develop from a ridge of epiblast cells constricted off from each lip of the closing medullary groove forming a ridge on each side of the medullary canal. When the medullary groove becomes closed, these two ridges fuse with one another in the median line forming a continuous plate. To this plate of epiblast cells the name of Neural Crest was applied. The dorsal spinal nerve roots form from the growing out of buds at fixed intervals along this neural crest. These buds migrate down the lateral walls of the medullary canal until they reach a position about on a level with the notochord, then they lose their connection with the neural crest and become free as the rudiments of the dorsal spinal nerve ganglia; later they form connections with the spinal cord and ventral spinal nerve roots and the peripheral parts of the body, which they innervate by sending out processes, which grow out among the tissues till they reach their proper endings, and also back into the spinal cord. This neural crest extends up into the region of the head; there some of the cranial nerves develop from it in a manner similar to the way in which the regular nerves of the trunk do; appearing first as small buds which push down the sides of the primitive brain vesicles, losing their dorsal connection with these vesicles, becoming free, later taking up a ventral connection with the brain vesicles again. On the other hand some of the cranial nerves develop just like the ventral or motor roots of the spinal nerves, as simple outgrowths of the ventral wall of medullary canal.

These two discoveries, as I have already remarked, give us two new factors by means of which we can compare a trunk with a head segment. It is obvious that if we have a segmentation of the mesoderm of the head, similar to the segmentation of the mesoderm of the trunk, and if the nerves of the head region develop in a manner similar to the nerves of the trunk region, we have so much the more reason for regarding a head segment as the equivalent to that of a trunk segment.

Farther, that, as the segmentation of the mesoderm into these primitive segments occurs at a stage long before the appearance of any actual skeleton, we have in them an index to segmentation far more valuable than any gill slits, cranial nerves, or bones could be. Moreover, these primitive mesodermic or muscle segments (for it must be remembered that it is in relation with these segments that all the muscles of the body arise) determine the segmental distribution of the peripheral

nerves. For the motor nerves, supplying the muscles of the segment to which they run, unite to form an anterior or ventral root as they emerge from the spinal cord, and the sensory nerves, running to supply the skin of the same segment, unite in a similar manner to form a sensory or dorsal root; the ventral and dorsal roots uniting in higher forms, to form the complete spinal nerve, although in *Accipenser* and *Petromyzon* and others, they still retain their primitive nature and remain throughout life as distinct and separate nerve trunks.

So with Balfour the index of cephalic segmentation is to be found in the cavities which exist in the middle of these primitive segments or myotomes, which as I have already said, are simple prolongations from the original body cavity. So by counting up the cavities of the head or head cavities, he hoped to be able to arrive at the correct number of segments which had primitively entered into its composition. As Balfour's untimely death occurred in 1882, so putting an end to the full elaboration of his work, and as his pupil, Milnes Marshall, took up and further worked out his ideas, I shall simply state Marshall's results, saying that Balfour recognized at least 8 segments in the head, Marshall starts out by formulating the characteristics which a segmental nerve should have in order to be of any value as an index to the number of head segments. These are: 1st. It should develop as an outgrowth of the neural crest.

2nd. Its point of attachment should change with the progress of development, from the neural crest to the ventral side of the brain.

3rd. The general course of the nerve should be at right angles to the axis of the brain; a segmental nerve should not transversely cross several segments.

4th. The nerve should show a relation to a visceral arch, and also to a head cavity.

5th. A segmental nerve very constantly presents a ganglionic enlargement near its origin from the brain.

He then proceeds to apply these five tests to each of the cranial nerves in turn, starting first with the olfactory.

Now up to Marshall's time the olfactory nerve had been regarded as a prolongation of the brain and for this reason Stannius, and Gegenbaur had left it out of account in their dealings with the subject, but Marshall very correctly points out that in its development it really arises like all the other nerves of the head. Arising from the neural crest, its origin becomes shifted down to the ventral side of the brain, and in its primitive condition it really runs at right angles in the segment to which it belongs; it being only by the unequal growth of certain parts of the head that it comes finally to run, as in the case of amphibians in the long axis of the brain. It splits up to embrace the

olfactory organs just as any of the vagus branches split up to embrace their respective gill clefts, so he concludes that the "olfactory organ is the most anterior visceral cleft; that the olfactory nerve is a segmental nerve supplying the two sides of that cleft in a manner precisely similar to that in which the hinder clefts are supplied by their respective nerves, and that the Schneiderian folds of the olfactory organ are the homologues of gills."

The only trouble with this is, as has been so often pointed out and first by Marshall himself, that the olfactory organ or nasal pit is derived as a sinking in of the epiblast, while the gills or visceral clefts are derived as evaginations from the hypoblast of the alimentary canal,—so forcing him to compare as similar and homologous structures organs developed from separate and distinct embryological fundaments.

TABLE OF HEAD SEGMENTS ACCORDING TO MARSHALL.

Segment.	Nerve.	Visceral Cleft.	Visceral Arch.
1. Preoral.	I. Olfactory.	Olfactory.	
2. Preoral.	III. Oculomotor. IV. Trochlearis.	Lachrymal.	Maxillary.
3. Oral.	V. Trigeminal.	Buccal.	Mandibular.
4. Postoral.	VII. Facial. VI. Abducens.	Spiracular.	Hyoid.
5. Postoral.	IX. Glossopharyngeal.	1st Branchial.	1st Branchial.
6. Postoral.	X. Vagus 1st Branch.	2nd "	2nd "
7. Postoral.	X. " 2nd "	3rd "	3rd "
8. Postoral.	X. " 3rd "	4th "	4th "
9. Postoral.	X. " 4th "	5th "	5th "
10. Postoral.	X. " 5th "	6th "	6th "
11. Postoral.	X. " 6th "	7th "	

I have drawn Marshall's conclusions in tabular form as he expressed them that you may make out these various relations, and you will see that he gets eleven segments altogether; this is due to his considering sharks like *Heptanchus* with seven gill slits, as the most primitive form

thus gaining two extra segments behind the ear. In front of the ear he has the same number of segments, practically, as Gegenbaur.

You will see that of the twelve cranial nerves he leaves out of account four—the optic, regarding it as part of the brain, the auditory, which he regards as part of the seventh and so not entering into the scheme, the spinal-accessory and hypoglossal, not being constant as cranial nerves, he holds are so not worthy of consideration.

A little later in the year in which Marshall's paper was published, appeared a paper by the Dutch investigator, Van Wijhe, which has received more attention and has been more frequently discussed than any of the numerous publications on this subject. Van Wijhe makes head cavities the basis of his work and tries to show the morphological comparability of a trunk segment with a head segment in a manner much more thorough than either Balfour or Marshall had done before him.

Although, as I have stated, Balfour first discovered these head cavities and recognized their segmental value, he did not study them further than to determine the presence of a premandibular, a mandibular, a hyoidean, and several branchial cavities. He determined that there is at first a simple undivided prolongation of the primitive body cavity of the trunk into the head region, reaching as far forward as the optic vesicles. This cavity then becomes divided into two parts by a constriction caused by the developing spiracular gill slits. The anterior part then divides into two parts by constriction, along the line of the developing mouth, the posterior part being divided in turn by the successively developing gill slits, so forming a series of separate cavities, one for each gill bar. These separate pockets are in communication with one another over the tops of their respective gill slits, though separated from one another ventrally, then later, they become completely separated from one another; the dorsal parts, which were originally in communication with one another, become in addition separate from the ventral parts in the first three of these cavities.

Marshall, going further, thought that the dorsal parts which became distinct from the ventral parts in the case of the first two cavities, were to be compared with the regular trunk somites, minus their ventral or hypomere portion, because he claimed to be able to trace the origin of the eye muscles to the dorsal parts of these cavities, and as the muscles of a trunk somite are developed from the dorsal portion of a trunk somite, minus its ventral portion or hypomere, he claimed on these grounds the homology was complete between these respective parts of the trunk and head somite. It did not occur to him that it was possible in any way to compare these series of ventral cavities with the one great ventral cavity of the trunk somites with which the dorsal cavities of the trunk somites all communicate.

It remained only for Van Wijhe to confirm Marshall's account of the origin of these head cavities, and to show that, if it were not for the presence of gill slits in the head region, we would have the same condition of affairs in the head region as we have in the trunk region; that is, these ventral cavities are strictly homologous with the one great ventral cavity of the trunk somites.

Van Wijhe also confirmed Marshall's statement regarding the origin of the eye muscles from the three first of these head cavities (that is their dorsal parts) although in their exact origin he found some slight differences from Marshall's account.

HEAD SEGMENTS ACCORDING TO VAN WIJHE.

Somite.	Muscles from the Somite.	Ventral Nerve Root.	Dorsal Nerve Root.
1.	Rect. sup. inf. int. and inf. Oblique.	Oculomotor.	Ophthalmicus profundus.
2.	Superior Oblique.	Trochlearis.	Trigeminus less Oph. prof.
3.	Rectus Externus.	Abducens.	Acusticofacialis.
4.	None.	None.	
5.	None.	None.	Glossopharyngeal.
6.	Very rudimentary.	Not recognizable.	Vagus.
7. 8. 9.	{ Muscles from skull to shoulder girdle with anterior part of sterno-hyoid }	Hypoglossus.	

From the first pair of cavities, which are premandibular in position, he finds the rectus superior, inferior, and inferior oblique muscles are developed, all innervated by the motor ocular nerve (III).

From the second cavity, which is situated above the mandibular arch, sending a branch of its cavity into it, is developed the superior oblique innervated by the trochlear (IV).

From the third cavity situated above the hyoid, is developed the external rectus innervated by the abducent nerve (VI).

The fourth cavity is partly also in the hyoid arch. From this fact that he gets two cavities in relation with the hyoid arch; he considers it as really double.

The remaining cavities follow one another in regular order, only interrupted by the auditory organ; the fifth and the sixth produce a

few small muscle strands, while the seventh and eighth and ninth unite to form the ventral prolongation of the sterno-hyoid muscle. So Van Wijhe regards the head as formed of nine segments, and he goes farther than those before him in attempting to develop a ventral and a dorsal nerve root in conjunction with each of his segments.

In the decade and a half which has elapsed since Van Wijhe wrote his famous paper, an innumerable number of attempts have been made to add further to his discoveries.

Miss Platt, one of our American investigators has discovered what is undoubtedly a head cavity more anterior still to Van Wijhe's first or premandibular cavity. She claims that it develops as an evagination of the primitive mouth or archenteron of the embryo, she claims also that Van Wijhe's first and second cavity develop likewise.

This places the problem in an entirely different light, and the question becomes whether these structures represent dorsal diverticula of the mesoderm, or lateral diverticula from the alimentary canal, whether they are of mesoblastic or of hypoblastic origin. If they are proved to be diverticula of the alimentary canal and so of hypoblastic origin, it is impossible to institute any homology between these preotic cavities and those of the postotic and trunk region.

As time has gone on every shade of opinion has been expressed regarding the nature and the number of these cavities. Their very existence has been denied, reaffirmed and denied again, and if this great divergence of opinion among the followers of Van Wijhe stands for anything, then it is that the question is far from being settled now as then.

To the researches of Frierip and Beard, we owe the discovery of what Beard has called the "suprabranchial sense organs" or sense organs of the lateral line.

Beard has discovered that a cranial segmental nerve develops in the following manner:—It first arises from the neural crest, then grows downward till on a level with the top of the gill cleft, above which it fuses with the external epiblast, a thickening of the epiblast occurring at this point of fusion, which subsequently gives rise to the ganglion of the nerve, from which a branch is sent up dorsally, while the main stem of the nerve grows down splitting up to supply both margins of the gill slit.

He endeavours to prove that all the cranial nerves except the optic, develop in this manner; the main point being the development of the nerve from the neural crest in relation with this epiblastic thickening or sense organ.

Formerly Beard spoke of these organs as "segmental sense organs" and as so distributed throughout the body, but now he wishes us to consider them, although segmentally arranged, as having always been limited to the gill region.

Among the noteworthy features of his results is his recognition of the olfactory as a segmental nerve, though on different grounds from those upon which Marshall had so considered it, for he regards the olfactory organ as nothing more or less than a much modified supra-branchial sense organ.

HEAD SEGMENTS ACCORDING TO BEARD.

Segment.	Dorsal Nerve Root.	Branchial Cleft.	Nature of Sensory Organ of Cleft.	Ganglion.	Head Cavity.	Ventral Nerve Root.
I.	Olfactory.	None.	Olfactory Organ.	Olfactory.	None.	None.
II.	Radix longa of Ciliary ganglion.	None or Hypophysis.	Branchial.	Ciliary.	First.	Oculo-motor.
III.	Trigeminus.	Mouth.	Branchial.	Gasserian.	2nd.	Trochlear.
IV. V.	Facial.	Absent. Branchial	"	Facial.	Third. †	Abducens None.
VI.	Auditory.	None.	Auditory Organ.	Auditory.	None.	None.
VII.	Glossopharyngeal.	1 Branchial	Branchial.	Glossopharyngeal.	†	None.
VIII.	Vagus I.	2 "	"	Vagus I.	None.	None.
IX.	" II.	3 "	"	" II.	None.	None.
X.	" III.	4 "	"	" III.		
XI.	" IV.	5 "	"	" IV.		

The facial is regarded as a compound nerve, and the auditory as segmental, because it supplies the ear which, like the nose, he places in the same category of a much modified supra-branchial sense organ. Naturally, if these sense organs are to be limited to the gill region, as Beard claims they are, they cannot afford any common basis for the comparison of cranial with spinal nerves.

For if the cranial nerves develop in definite relations in regard to these sense organs, then these sense organs being wanting in the trunk region, it only adds to the differences in development of these two sets of nerves. This leads Beard to regard a typical head segment as different from a typical trunk segment, and the two structures to be entirely of different origin. But although he makes this difference between head and trunk, he still hopes to determine the correct number of segments composing the head, by counting up the number of

sense organs along the side of the head which were primitively situated one over each gill cleft. Beard in concluding his paper expressed it as his opinion that "experimental evidence of the real nature of these sense organs will be shortly forthcoming, and that here a valuable field of research is open for the physiologist." But time has not borne him out in this, for we are as far from knowing anything of their real physiology now as 45 years ago, when Leydig first discovered them; he pointed out that they were sense organs and there the matter has remained ever since.

Hoffmann in following out the development of the cranial nerves of *Acanthias*, one of the dogfish tribe, has made the discovery that in this interesting form, which is evidently archaic in this respect, the cranial nerves and also the dorsal roots of the spinal nerves do not develop from the neural crest, but from paired hollow segmental evaginations of the dorsal wall of the medullary canal itself.

These hollow evaginations grow out on either side of the head to reach the skin, fusing with it and forming a thickening at the point of fusion. This thickening represents the primitive nerve ganglia; a nerve is then guided out from this primitive ganglia, which grows back to the brain or spinal cord and which becomes the permanent nerve, the first or primitive nerve having entirely disappeared.

The importance of this discovery is at once recognized when we reflect that this is the manner exactly in which the optic nerve and the eye develop; for the bulb of the eye represents one of these modified nerve ganglia. For the researches of Assheton, Froriep, Keibel and Spencer have long ago shown that the optic nerve develops as a hollow outgrowth from the brain, which growing out meets with a depression in the skin called the optic pit, with which it fuses; it then loses its connection with the brain by the absorption of the connecting nerve, the distal free portion, developing the retina, sends out a process which grows into the brain again, forming the permanent optic nerve.

Some six years ago Ramon y Cajal, in investigating the structure of the retina by means of his celebrated Golgi method, came across peculiar nerve cells, the like of which were only to be found in certain parts of the brain, in fact, they were readily recognizable as brain cells. He concluded, therefore, and everybody else agreed with him, that this discovery settled beyond all doubt the opinion that the optic nerve and the retina are simply parts of the brain and so to be kept distinct from the other nerves.

You have seen how Gegenbaur, Balfour, Marshall, and Van Wijhe, had all left the optic nerve out of account in their considerations of the segmental cranial nerves, but this discovery of Hoffmann's makes it impossible for us to escape from the conclusion that the optic

nerve is anything other than a segmental cranial nerve, and it finally falls into place the last of the cranial nerves to succumb after a long and desperate struggle to be considered a modified brain lobe.

Hoffmann's study of the number of segments in the head correspond closely with that of Van Wijhe, except that he finds a rudiment of one of these skin ganglia posterior to Van Wijhe's ninth segment; he considers this evidence of an additional segment, giving him 10 segments in all, he finds the same nerve relations with regard to the other segments as Van Wijhe.

A year or so previous to Beard's paper, Alhborn published a paper in which he claimed there were two distinct kinds of segmentation to be distinguished in the head, one of the segmentation of the mesoderm into head cavities or somites and to which he applied the term "mesomerism;" the other the segmentation of the gill slits or branchial bars, to which he applied the term "branchomerism." Alhborn claimed that these two kinds of segmentation did not correspond with one another, that is, the segments of the mesoderm bear no relation to the position of the gill slits or branchial segments. But this was very soon shown to be wrong and that mesomerism did really correspond with branchiomerism, although in some forms the relations of the two are not plain. This paper of Alhborn's was soon lost sight of and attracted very little attention at the time of its publication, but the late studies of Béranek, Orr, Waters, Zimmermann, McClure, Loey, Küppfer and others, have brought it into prominence again and have shown it contains the germ from which greater things have developed.

For the investigations of these men have proved that in the embryos of all classes of vertebrates the central nervous system shows at a very early stage a series of constrictions and dilations, extending throughout the length of the neural tube, giving it a segmented or beaded appearance. This beaded condition of the neural tube they consider to be a third kind of segmentation to which they have applied the name of neuromerism. They see in this series of constrictions and dilations of the nervous system a condition comparable to the constrictions and dilations of the ventral nerve cord of invertebrates or their cephalic ganglia. These primitive neural segments they divide into two classes; those of the brain region, or the "encephalomers," and those of the spinal cord region or "myelomers."

They have found that in the trunk the developing spinal nerves bear constant definite relations to these primitive myelomers or cordal segments, and they hope to be able to show that a corresponding relation is to be found in the brain region between the developing cranial nerves and the primitive segments of the brain or encephalomers, although the relationship may not be so plainly made out.

"It is necessary for these investigators in using these primitive segments of the nervous system as criteria in attempting to elucidate this question of cephalic segmentation, to show :"

"First, the comparability of encephalomers with myelomers, not only structurally but also in relation to nervous outgrowths, and to those great divisions of the mesoderm on which as I have already shown, the distribution of the peripheral nerves ultimately depends."

"Second :—The correspondence with one another of neuromers, mesomers, branchiomers in each individual head segment. Yet the majority of these investigators, whom I have just mentioned have failed to bear this in mind, which has resulted in a diversity of opinion we would naturally expect in work based on insufficient knowledge." However, a paper has appeared, during the course of this summer by Dr. Neal, of Harvard, which has done much towards dispelling this trouble. Neal here considers the subject from every point of view and in discussing the matter, has left no stone unturned or argument unused. He says :—"Although the structure of myelomers and encephalomers is different, yet in the stages of embryoic development, when both are present, they are seen to have a segmental value from the fact that corresponding with them there are an equal number of mesoderm somites. These somites are morphologically comparable and serially homologous with trunk somites. I conclude then that there was a primitive correspondence between neuromerism, mesomerism and branchiomerism."

Neal also regards the three eye muscle nerves III., IV., and VI., as homologous in every way with ventral spinal nerves.

Pre-otic and post-otic metameres are homologous with one another and with trunk metameres.

He regards five mesomeres, alternating with six neuromeres in the otic and pre-otic regions of the vertebrate head ; and so eleven neuromeres finally included in the whole head.

Whatever may be the verdict of the future regarding the scientific value of these neuromeres, their discovery and study has at least undoubtedly proven that there is a segmentation of the nervous system of vertebrates of such a primitive nature as to point to its being an inheritance from the time before vertebrates had acquired their present vertebrate characteristics.

They establish certain general facts which we shall always have to bear in mind in our search for the origin of the vertebrates.

It is a strange contradiction in things, after what the discoveries of the last ten years have taught us regarding the anatomy and morphology of animals like rhabdopleura, cephalodiscus, and balanoglossus,

which have been shown in such a beautiful manner to be the very connecting links between vertebrates and invertebrates, that when we come to consider their nervous system, we are no better off than before and they afford us no additional light as to its origin or primitive condition in vertebrates. We have only to recall the profuse and vague dermal nervous system of *balanoglossus* and attempt to compare it with that of a vertebrate like *amphioxus*, to realize how hopeless becomes the task to trace any possible homology between the two.

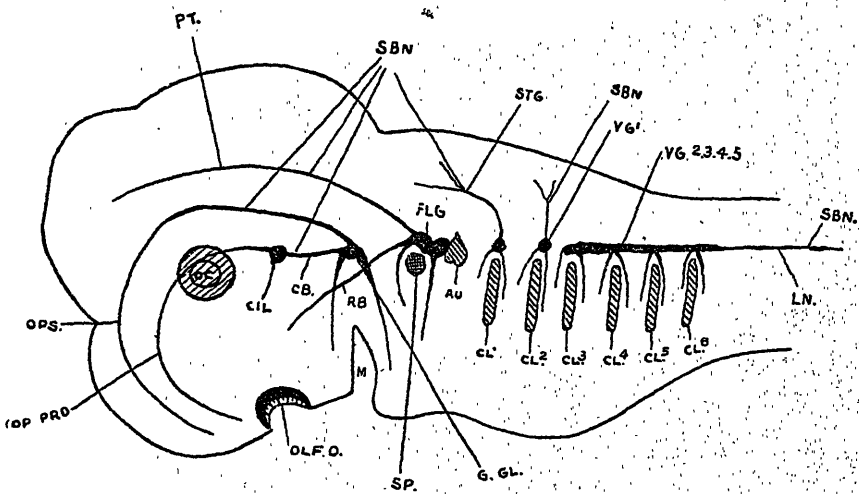


FIG. II. A diagrammatic figure of a vertebrate embryo head showing the distribution of the cranial nerves and their relation to gill clefts and supra-branchial sense organs according to the views of Beard. (Beard.)

AU.—Ear.

CB.—Nerve connecting ciliary and gasserion ganglia.

CIL.—Ciliary ganglion.

CL¹—CL⁶—Gill clefts.

FLG.—Facial ganglion.

G. GL.—Gasserion ganglion.

LN.—Nerve of lateral line.

M.—Mouth.

OC.—Eye.

Olf. O.—Olfactory organ.

OP. Pro.—Ramus ophthalmicus profundus.
OP. S.—Ramus ophthalmicus superficialis.
PT.—Portio facialis of ophthalmicus profundus.

RB.—Ramus buccalis 2nd supra-branchial nerve of the facial

Sbn.—Supra-branchial nerves.

SP.—Spiracle.

Stg.—Supra-temporal branches of the Glossopharyngeal.

Vg¹—Vg⁵—Vagus nerve.

With the conclusion of this subject of neuromeres, our most recent research may be said to end, though in passing I cannot help mentioning the work of the English physiologist Gaskell, which will undoubtedly do, and has already done much towards unravelling this mystery of the head.

The short limit of this paper renders it impossible for me to enter into any discussion of Gaskell's views. But it will be upon the lines of physiological investigation laid down by Gaskell that the great ad-

vances of the future will be made which we hope will lead to the final solution of this problem.

It is now over 100 years since this question of the segmentation of the head first took definite shape, yet to-day may we ask, how much nearer are we towards its final solution? How many segments compose the head? Beyond knowing that the head is certainly composed of more segments than the two or three of Oken's time, we cannot fix the number and before we can do so many other great questions will have first to be answered; not least amongst which is the meaning of metamerism or segmentation itself and the origin of the vertebrate nervous system.

Meanwhile in the words of Professor Locy, we may regard the head as the "highest product of evolution, the goal towards which in the morphological world, nature has been working for countless ages of time."

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WHY MEDICAL MEN SHOULD BE A COURT OF JUSTICE IN CRIMINAL CASES.*

BY

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In this short paper I cannot hope to touch all the evidence in support of making medical men the sole judges of criminal responsibility. In attempting to discuss the subject I am aware there is much new and unexplored ground and consequently some of my opinions will be oppugned. This is the first time, so far as I am aware, that this subject has been brought to the notice of a medical society; and if I should be able to demonstrate the proposition that medical men *should* be a court of justice in criminal cases, then will it become the duty of legislators to enact laws in conformity with scientific advancement, and to give medical men the status to which they are entitled as the authors of scientific knowledge touching crime and criminal responsibility.

The above title suggested itself to me on account of my being called to give evidence in criminal cases where one or the other party to the suit sustained bodily harm or injury. What impressed me, together with the fact that I generally lost a day for sixty cents, was that the crime and not the criminal was under examination. I say this without prejudice to the exponents of the law, the judges of the court, and members of the bar. While the legal profession alone has faculties for examining a criminal act, I hold that the medical profession alone can properly examine the criminal.

The test of criminal responsibility which our courts are bound to apply is that formulated by the judges in McNaghten's case, 10 Cl. and F. 200, which may be stated thus:—"The ability of the accused to distinguish right from wrong at the time of the offence." The judges practically say that, it being once established that the prisoner's mental disease did not prevent him from knowing that what he was doing was wrong, then, all evidence of insanity, tending to destroy his freedom of will, does not displace his criminal responsibility. Now, alienists to-day repudiate such a criterion, and say the proper inquiry is, "whether, in consequence of congenital defect or acquired disease, the power of self control is absent altogether, or is so far wanting as to render the individual irresponsible." As has again and again been shown, the unconsciousness of right and wrong is one thing, and the powerlessness, through cerebral defect or disease, to do right, another. To confound

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them in an asylum would have the effect of transferring a considerable number of the inmates thence to the treadmill or the gallows. A writer in 12 Criminal Law, page 4, says: "The rule in the McNaghten case is attacked because it holds a partially insane person as responsible as if he were entirely sane, and it ignores the possibility of a crime being committed under the duress of an insane delusion operating on a human mind, the integrity of which is destroyed or impaired by disease, except perhaps where the imaginary state of facts, if real, would excuse or justify the act done under their influence."

Although the field of criminal responsibility is largely unexplored, such men as Hodge and Tuke have thrown the light of science over the dark field and made it possible to cultivate it. The study of criminal responsibility presupposes a study of human nature, of man himself. It is in the nature of man to dominate the world, to plan, to calculate, and to work out his existence. It is natural for him to hope, to pay homage, to love, to envy. These are common attributes, implanted in him by God and Nature. Each species of the lower animals has a nature implanted in it peculiar to itself. By that nature, as well as by form, size, and appearance, are we enabled to distinguish one species from another. There are certain habits, traits, or instincts in each that distinguish it from all others. Each begets its own kind, and never is a species propagated that cannot be distinguished by its antecedents. Human nature distinguishes man from all other animals. While the distinguishing element is constant and immutable, there are certain inherited physical, mental, and moral differences. Some have an inherited predisposition to disease, some to degeneracy, to immorality, to crime. Thus syphilitic and insane parents are apt to beget syphilitic and insane children. The sins of the father shall be visited on the offspring to the third and fourth generation. Like begets like; thus large men beget large children and fair parents beget fair children. Thistles do not grow on thorn bushes. Poets are born, not made. So may we say with truth, the artist, the painter, the musician, the witty, and the wise are born, not made. We are all born with different capabilities, different degrees of intelligence, differently endowed, and each with a different horizon. The poet is not made, but he, too, in common with us all, is subject to external influences and organized systems of education prepared to cultivate the mind. "A good tree cannot bring forth bad fruit nor can a bad tree bring forth good fruit." Hence we are all the product of our antecedents. So the doctrine that all men are born equal is absurd. Surely the idiot born is not the equal of him born *mens sana in corpore sano*. Between the idiot and normally born, there is every gradation of inequality, mentally, morally, and physically. Responsibility varies in each according to his intelligence, his capital, his power

of resistance. In the church, the state, and social order, the rights and duties of members are founded on absolute equality among themselves.

Absolute equality does not exist, therefore, the laws governing the rights and duties of members cannot be uniform and constant for all. In the case of idiotic and insane persons, the law at present recognizes their condition, and under the law they are regarded as irresponsible. But what of the class of alleged offenders, hovering between mental health and idiocy or insanity, those on the threshold of insanity though not insane? Is it possible to refer their so-called offenses to morbid conditions? The object of legitimate law is to secure to every individual his inalienable rights, not to grant him these rights, nor to take them away. The habitual criminal, mentally and physically abnormal, in physiognomy, in various stigmata of degeneration, in deficient reason, lack of forethought, vanity, egotism and emotional irritability, has the right to escape punishment for his so-called criminal acts, provided they be the result of his abnormal condition, whether insanity exists and can be proven or not. "No physical or moral misery, no suffering, however corrupt it may be, should frighten him who has devoted himself to a knowledge of man and the sacred ministry of medicine; in that he is permitted to see all things, let him be permitted to say all things." Thus medicine undertakes to save the honor of mankind before the Court of Morality, and individuals from the judgment of their fellow men.

In the course of almost every case of idiopathic insanity, *i. e.*, insanity due to over exertion of the brain, we have a fairly well marked prodromal period indicating the diseased balance between nutrition and function in the kinæsthetic area. This prodromal stage—this transitional stage between mental health and insanity—has not been fully investigated, and cases are described by the alienist only when fully developed. The essential feature of insanity is an abnormal response to stimuli from within or without, while neurasthenia appears to be the expression of a morbid unhealthy reaction on the nervous centres which preside over the functions of organic life. The changed condition in the cells of the cortex, probably combined with the toxin introduced in the blood through the deranged metabolism of the cells, must naturally lead to disturbance of the higher centres of the brain, which, unless corrected, must necessarily lead to definite mental disease. It is claimed, and very correctly I think, that cases of neurasthenia frequently terminate in insanity. But the law does not recognize neurasthenia as an excuse or palliation because, forsooth, neurasthenia is not insanity. In neurasthenia one or more of the faculties may be affected, the remainder remaining normal. The neurasthenic may know the difference between right and wrong, and yet not have sufficient self control to prevent him from doing wrong. He is as powerless to prevent the acts resulting from his diseased con-

dition as he is to prevent a thunder storm. He is the creature of the forces that have made him what he is; the leopard cannot change his spots. Section 11, page 37 of the Criminal Code, says, "No person shall be convicted of an offence by reason of an act done or omitted by him when laboring under natural imbecility or disease of the mind, to such an extent as to render him incapable of appreciating the nature and quality of the act or omission, and of knowing that such act or omission was wrong." Now splitting hairs is a reproach only in so far as one is splitting the wrong hairs. Every lawyer knows how often a fine point in procedure or in law will turn the scales for his client and against the other party. In like manner how often a fine point, scientifically examined, would weigh to reconstruct a legal definition, that would excuse or justify an alleged criminal or condemn an imposter.

It is remarkable how, without pay or due credit, the public appropriate the discoveries of medical men, especially when the discovery makes directly for the public good. Instead of receiving recognition from the public for work done in psychology and pathology, members of the profession are simply subpoenaed to give evidence before a court of justice, often without pay or profit. "We teach them to swim and then they drown us." It is time, therefore, that we asserted our rights to prevent the unseemly conduct witnessed every day in our law courts, of pitting one medical witness against another, neither of whom may ever have made a special study of the nervous system, and many of whom are "experts," only in name. As an alternative, let there be a Medical Court for Criminal Cases, one composed of educated, medical experts, whose broad culture and special knowledge will make them the highest authority in the land on such questions as criminal responsibility, whose professional skill will enable them to adjudge and differentiate the motives, the capital, and the power of resistance of the unfortunate criminal, and who will prescribe treatment or punishment according to the necessities of each case.

ABNORMAL ELECTRICAL STORAGE IN THE HUMAN SYSTEM.

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Acupuncture as a remedial agent in painful affections, dates back for over 200 years, when it was used in both China and Japan. It is supposed to have been entirely unknown to the Grecian, Roman and Arabian physicians. In Europe it was first known about 170 years ago, from the writings of a Dutch surgeon, Ten-Rhyne, who wrote in 1683, and attention was also carefully drawn to it by Kampfer, Churchill, Scott, and Elliotson, in England; Dantu, Velpeau, Dance, and Meyraux, in France; and Heyfelder, Grafé, and Sachs, in Germany; Carraro and Bellini, in Italy, and Ewing, Coxe and Bache, in the United States, who have all been active workers and thinkers on the use of the Acupuncture. Cloquet, of Paris, in 1862, published his remarkable treatise on this subject, which did much to revive its use in practice. For many years I have been in the habit of treating cases of supposed muscular rheumatism by the insertion of small (No. 8) fine steel needles, and the number used varied according to the extent of the affected parts, and as a general rule, the seat of pain will indicate the precise place and extent to which the needles should be used. We need not fear the number used, which are inserted from one-half to three-quarters of an inch, through the skin, into the muscular tissue, at distances apart from an inch to two or three inches, according to circumstances, where they should remain one or two minutes, and then be removed. Before puncture, the painful muscles are found hard and tense on pressure, and the needles are introduced into the parts affected by the pressure of the nail, slight force being necessary. When *in situ*, a moment or two, the muscles relax, their condition, almost of tetany, become soft, pliable and free from pain, and the needles are removed quite easily, no force whatever being required, and immediately after the patient is able to leave the bed, and walk about freely, pain having departed, with marked rapidity. The question which naturally suggests itself is, what is the exact condition upon which the pain depends. True, some authorities doubt its rheumatic nature, and regard it as a neuralgia of the sensory nerves of the muscles. Yeo does not consider it correct to group it with these rheumatic myalgic attacks, conditions of muscular aching or stiffness, such as follow excessive use of certain muscles in riding, rowing, bicycling, etc. The pain I have never found in those well-defined condi-

tions associated with febrile disturbance, and varies very little as to its usual intensity, which is invariably increased by even the slightest effort to move the body when in a fixed position. The most usual form is known as "Lumbago," sudden in its onset, and usually master of the position for the time being.

Dunghison (New Remedies, p. 73) states that Schweiger (Riecke, s. 16) demonstrated by the multiplier, that when the free extremity of an inserted needle is connected with the ground by means of a conducting substance, or is put in connexion with a soft part of the body of the patient, it becomes the seat of a galvanic current. In 1827, M. Nobili, having constructed a very sensitive galvanometer, was enabled to detect without doubt, the existence of an electric current in the frog. He observed that when the needle was placed in the circuit it was deviated some 30° . Du Bois Raymond by elaborate researches, demonstrated that currents, like the so-called frog current, may be observed in any animal, whether warm or cold blooded. The escape of electricity under such circumstances, is extremely important, and points to abnormal storage in the tissues of a positive or negative character, and stored, not unlikely, as the result of an altered condition of the various fasciæ, the result of sudden draughts or cold. Immediately the needles are touched, after insertion, the electrical accumulation is simultaneously discharged, and passes through the body of the operator without any serious result. This state of parts is termed muscular rheumatism, and known as pleurodynia, torticollis, and lumbago, sudden as to onset, painful as to condition, and rapidly relieved defines pain, (*Dict. of Med.*, p. 1080) as "the representative in consciousness of a change produced in a nerve-centre by a certain mode of excitation." A striking peculiarity in lumbago, *et al*, is that no pain is excited by touching the skin superficially over the affected parts, the touch being equal to that in the usual state of health, from which we would infer the absence of any surface hyperæsthesia. The intensity of pain must have some connection with an excited condition by electrical accumulation, in not only the muscular tissues, but the nerve tissues as well, supplying nerve force to these parts. This source of irritation, once removed by acupuncture, and electrical discharge, almost immediate relief is the phenomenal result. After removal of the needles, the skin is sponged over the site of punctures with ordinary water and followed by friction of a course towel for a few moments.

Case No. 1.—R. P., æt. 42 years, enjoys usually excellent health, never experienced any serious illness except a few occasional attacks of muscular rheumatism. Robust stature, and no evidence of any organic trouble whatever. March 25th, seized suddenly after exposure to a draft, with sudden pain throughout almost the entire lumbar region,

which confined him to bed, being quite unable to turn or move without great suffering. No increase of temperature or even acceleration of pulse. The muscles in the lumbar region were firm on pressure and quite tense and rigid. Twelve No. 8 needles, were introduced into the rigid parts and the relief was almost immediate. In ten minutes he arose from his bed and walked around his room, which he could not possibly do before acupuncturation. March 26th, able to move around his room freely and on the 27th returned to his seat in the House of Commons.

Case No. 2.—H. T., aged 45 years, physical formation perfect. No organic disease whatever, and as a rule enjoys excellent health. Some 25 years ago, had an attack of acute articular rheumatism after exposure and bodily fatigue. Up to the present his digestion has been perfect. May 3rd, underwent considerable fatigue in "The Commons," and being exposed to a draught, contracted a severe attack of lumbago and pleurodynia, which confined him to bed. May 4th, quite unable to move out of one position without severe pain in both right side of the thorax, and almost the entire lumbar region. No increase of temperature or acceleration of pulse. The bowels had been well relieved, and the urine voided in normal quantity, contained an excess of lithic acid. Tongue moist but not coated, and up to the date of attack, the digestive functions were perfect. On the night of the 4th, I found him almost pinioned down and unable to move, or breathe vigorously, without pain and suffering. Fourteen No. 8 needles were inserted into the back and side of thorax affected. The various muscles implicated were firm and rigid, until punctured, after which relief was instantaneous, and he arose from his bed and walked freely around his room, owing to almost perfect freedom from pain. In two days afterwards, he returned to the Commons and discharged his usual official duties without any apparent inconvenience.

NOTES FROM PRACTICE IN THE ARGENTINE REPUBLIC.

BY

F. G. CORBIN, M.D., (McGill, '90.) Mendoza, Argentine Republic.

Pylorotomy.

N. V., forty years of age, a worker in stone pavements, came to my consultation room on September 1, 1899, complaining of loss of weight, inability to digest his food, vomiting if he took a very little solid food, and a slight pain in the epigastrium. He was very emaciated and low spirited. As he confessed being, or rather having been, a hard drinker, and as no tumour was to be felt in the stomach, I thought it was a case of alcoholic gastritis and put him on a milk diet with some bismuth and soda powders. As he was better on the 10th, I told him to take a little soup with the milk.

He continued to improve up to the 17th when he became worse again, and vomiting and indigestion returned. Back to milk I ordered him and added two centigrams of cocaine to the powders. He said there was no blood in the vomit, in fact, nothing but the food taken. His condition continued about the same up to October 9th, when I proposed a laparotomy, having come to the conclusion that there was pyloric obstruction, perhaps malignant in nature. He consented and went into the San Antonio Hospital on October 10th.

On October 11th, aided by Drs. Goldsack and Paladini, I opened the abdomen, making an incision parallel with the ribs, beginning in the middle line. Although this incision may not be the classical one for a pylorotomy, I used it, hoping, as it proved, that it would give me more room than a median one. I may say that in my experience it is always better to open the abdomen through muscle, but without cutting across the muscle fibres. For instance, with the median incision, I always go half a centimetre from the median line and split the fibres of the rectus muscle, rather than try for the exact linea alba. I found the pylorus and right end of the stomach of a stoney hardness, and on invaginating my index finger, I found a stricture, the lumen of the pylorus being reduced to almost nothing. There were no adhesions to surrounding parts and as far as could be made out no glandular infection.

I determined to take away the cancer, and after enlarging the abdominal wound pulled out the stomach and pylorus as far as possible, which owing to the normal attachments of the duodenum, is more difficult than in other parts of the intestine. I now passed well to the left of the induration, an intestinal clamp (applying it almost in the middle of the

stomach) and another as far to the right of the pylorus as possible. With scissors I next cut away all the part between, as shown in photograph (I). This pair of scissors was put aside and not used again during the operation. The mucous membrane of both extremities was then wiped with gauze moistened in saline solution and, after a little trouble, I was able to bring the edges of the cut surfaces together. I first sewed the mucous membrane of the posterior inferior border of the cut stomach to the posterior border of the cut duodenum, then united the anterior and posterior walls of the stomach in the upper part, using a continuous suture of No. 1 silk. I next united the rest of the stomach part of the incision by a continuous Dupuytren suture, and after that, and with the same form of suture, I brought the peritoneum well over my line of suture in the muscular and serous coat. The front part of the duodenal mucous membrane was then united to the anterior inferior mucous membrane of the stomach and also the serous and muscular coats of both, and over all the peritoneal coat drawn. The only part in which I had any difficulty was in the suturing of the serous and peritoneal coats at the back of the duodenum. Figure 131, page 832, "Jacobson," 2nd edition, gives a fair idea of what was done, but I did not use interrupted sutures as shown in this figure. I think interrupted sutures are more often printed in books than used in intestinal surgery, but I may be wrong. One thing is certain, a continuous Dupuytren suture is just as good and takes at most one half the time. Why then should it not be used? I believe that any procedure which lengthens the operation and, consequently, the anæsthesia should not be practised. The clamps were now taken off and three or four arteries, probably the right and left gastro-epiploicæ and branches of the gastric, were tied and the peritoneum drawn over the knots. I put in a gauze drain for two days, sewing up the external wound except at its lower corner. "When in doubt, *drain!*" somebody wrote in a medical journal. This time I was a little doubtful, and drained.

For four days I kept my patient on nutrient enemata, not allowing him to swallow anything. The highest temperature reached was 37.4° C. on the second day. This rise of $\frac{1}{10}$ of a degree above normal was perhaps due to the drain, as after it was removed the temperature never rose above 37°. I may say here that 36.8° C. is the normal temperature here in Mendoza. We are 650 metres above sea level. I have taken the temperature of all the men of the 1st Regiment, Mountain Artillery, and found that from 36.6° to 36.8° was the rule; not a single man reaching 37° in the axilla.

V. made an interrupted recovery and left the hospital on November 15th, one month and four days after the operation, having gained 4 kilos in weight. The photograph sent was taken on December 24th; he then

weighed 9 kilos (20 pounds) more than before the operation and felt strong and well. Photograph II.

Will the disease return? Time alone will tell. One thing is certain, that as far as the local disorder is concerned it was thoroughly extirpated as seen in the photograph of the stomach. There is nearly an inch of healthy duodenal tissue on the left, while at least two and a half inches of healthy gastric tissue was taken away on the right. Seven months and a half have now passed since the operation and my patient is still well, but I am sorry to say he has gone back to his alcoholic habits.

Hepatectomy.

J. S. C., 34 years of age, a finely built man, entered San Antonio Hospital on January 11th last. He had never been sick. His father and mother are healthy. Three months before admission, he began to feel a lump in the right side of the abdomen just below the ribs. He had never had any pain nor had he suffered from indigestion or other intestinal disorder.

On examination, a tumour about eight inches long and four broad was felt in the right side of his abdomen. This tumour could be felt very distinctly, extending from the right hypochondrium, where it appeared to be fixed, to the upper border of the right iliac region. The central portion was in front of the umbilicus, and was very freely movable, so much so that if the man turned upon his left side it would fall over and could be distinctly felt to the left of the middle line. It moved up and down with the liver during respiration. As may be supposed, a correct diagnosis was only made after opening the abdomen. My idea was a very much distended gall-bladder or else a hydatid cyst, both of which are common enough in this country. The first is very common here in Mendoza where the water is laden with lime, the second in all parts where sheep and dogs are plentiful.

On opening the abdomen by an incision extending along the right border of the rectus muscle from the lower border of the ribs to about three inches below the umbilicus, I found the tumour to be a prolongation of the liver. It was slightly adherent to the epiploon on the left side, was pedunculated, and on cutting into it showed pathological changes attributed to encephalomatous cancer. I decided to remove the new growth and treat the pedicle, which was a little bigger than a man's wrist, externally, as formerly recommended by Kimball, Wells, and others in hysterectomy. Tying off the attached epiploon, I removed the tumour from the abdomen and drew its neck well up into the upper edge of the wound. In the meantime a piece of rubber tubing had been well boiled and put into rectified spirits ready for use. I used tubing the size of my finger. Two turns of this were now made around the neck of the tumour close to the skin, and a pair of forceps put on to keep it from



slipping. I next cut off the main part of the new growth a centimetre above the tubing. I now passed a grooved sound through the neck between the two turns of the tubing so as to support the neck. I had no pedicle needle handy but my director served the purpose admirably. The peritoneum was next stretched tight around the neck, just below the rubber tubing and down to the lower edge of the wound. After that the muscles and skin were united. The photograph (III) was taken on the eighth day. The highest temperature reached was 38.1° C. on the evening of the second day.

Everything went well, the ligature being taken off on the twelfth day and the wound gradually closed up. The lower part of the wound closed by first intention. A good deal of bile always came away from the cut liver, but this same bile appeared to stop the entrance into the wound of pus germs, as I never saw even a drop of pus around the wound.

C. left the hospital well on February 26th. The piece of liver taken away weighed 720 grammes. I think this case must be rather rare. I only see 21 cases mentioned in Greig Smith, while Fergue and Reclus, edition 1898, says that up to date there have been 30 cases. My case is, according to Fergue and Reclus, the third largest portion of liver tissue taken away successfully up to 1898. Israel operated on two cases in which he took away 750 grammes in one and 1225 grammes in the other.

Implantation of Ureters in the Bowel.

P. G., 38 years of age, albino, came into hospital on October 10th, 1899. Her first child was born on November 29, 1896, after a difficult labor, and a second on June 24, 1899. This latter required instrumental interference on the part of her attendant, Dr. Bello. The child was dead and the placenta was removed piece-meal. A fistula followed and was operated on by Dr. Bello on August 18th. I do not know what operation was performed, but it was not successful and she consequently entered the San Antonio Hospital on the date before mentioned.

On examination, I found a very narrow undilatable vagina (scar tissue) and fixed uterus without any appreciable neck in the vagina, *i.e.*, the os uteri appeared as a small hole in the fundus of the vagina. After studying the case, I decided to operate on her in the way described by Kelly, but determined to modify his operation by entering by the abdominal route.

On October 15th, assisted by Drs. Day, Goldsac, and Paladini, I opened the abdomen in the middle line, separated the bladder from the uterus, and stitched up both, putting a gauze drain in between these organs and between the two mouths of the ureters into the vagina. A soft sound was put into the bladder. The drain was taken out in forty-eight hours, when I thought my patient well and out of danger. She

had no fever and had been doing well. On October 18th I was taken ill with typhoid fever, so did not see her again for some months. What had happened in the meantime was as follows :—The wound in the abdomen had healed by first intention and the gap in the vaginal vault closed in a few days, but after a few days more, urine began to come away by the uterus. Several days after this Dr. Day removed a calculus from the cavity of the uterus. I suppose this calculus was the cause of the failure of the operation. It was cigar shaped, an inch in length, about the size of my little finger in the middle, and very rough and uneven. On October 29th, she left the hospital to return on my getting better, January 3, 1900.

On January 9th, Dr. Day and I tried to close the os uteri so as to make one cavity of the uterus and bladder opening through the urethra, but, after half an hour's work, we were forced to give it up. The narrow undilatable vagina and fixed uterus without any vaginal portion were the cause of our failure.

On January 25th, I decided to transplant the ureters and was assisted by Dr. Day while Dr. Paladini gave the anaesthetic, chloroform. We opened the abdomen a little to the left of the first incision from the umbilicus to the pubes. Our patient was now put in the Trendelenburg position and the posterior layer of the peritoneum incised over the left common iliac artery. I at once found the ureter, and separating it from the loose tissues around, tied it with a silk ligature as far down as possible, cut it, and put a pair of forceps on the distal end. I now went for the right ureter, but found it only after half an hour's search. It was at least an inch and a half from its normal position towards the outer or, as the case was, right side. The right side was treated as the left had been half an hour before. I now proceeded to pick up the posterior peritoneum and stitched it with a fine, catgut, continuous suture on each side, letting the ureters come through at the upper margin. The sigmoid flexure of the bowel was now lifted up clamped and punctured and the right ureter introduced into the hole and stitched there with fine silk. The left ureter was longer and was put into the gut in the same way, but lower down in the upper part of the rectum. The moist gauze which had been protecting the intestines was removed and the whole wound closed. I had been an hour and twenty-seven minutes. Recovery was uneventful, if one excepts the vomiting, which continued for four days. There was no fever at any time. At first she required to empty her rectum every hour, then every two hours, and later every three or four hours. She left the hospital twenty-two days after the operation.

In spite of what was expected by some of my colleagues, my patient has done remarkably well. She now (May 16th) has her bowels moved five or, at most, six times in the twenty-four hours, feels no discomfort

whatever, and is very well pleased with the result. So far, four months after, there is no colitis or other inflammatory process and no sign of nephritis. I will report again on this case a year from now.

Radical Cure of an Inguinal Hernia in a Woman 98 Years Old.

Inguinal hernia in a female is not common. In more than 100 hernia operations I have only twice had to do with inguinal herniæ in women. Operations on persons 98 years of age are also not common. I at least have never heard of such a case. This woman, nearly a century old, remembers the War of Independence of this country (1810), and she was a widow of 59 at the time of the great earthquake (1861), which destroyed Mendoza.

About a month ago she came into my office to consult me regarding her hernia, which was painful and about the size of a goose egg. I examined her heart, lungs, urine, etc., and finding no disease told her that I would like to operate on her for the hernia. She at once consented and I sent her to the San Antonio Hospital, where on April 28th, I did a radical operation as described by Kelly in his *Operative Gynecology*, Volume II. It was done under chloroform in seventeen minutes. I was assisted by Dr. Day.

The old lady lives here in Mendoza. The wound healed by first intention, she leaving the hospital on the 15th day. I report this case as a curiosity, as I suppose she is the oldest person in the world on whom a successful laparotomy has been performed.

The Treatment of Acute Gonorrhœal Arthritis.

I was very much surprised to see in Dr. James Stewart's paper on Gonorrhœal Arthritis in the March number of the MONTREAL MEDICAL JOURNAL, that no mention was made of operative treatment for the relief of these cases. I have operated on one with very good success and helped Dr. O'Connor of the English Hospital in Buenos Ayres with two others, of which one was gonorrhœal and the other acute rheumatism. As far as I have learned, Dr. O'Connor certainly has had very good success in all of his cases. In the *Glasgow Medical Journal* of 1898, Dr. O'Connor reports nine cases, and in the *Lancet* for July 8, 1899, he adds two more, both cured by operation.

Would it not be worth while to hand over the acute arthritic cases to the surgeon at the start, instead of giving salol, and salicylates or even hot baths? The results of medical treatment up to date are not even half good. Why not give the surgeons a chance? Of course the earlier the joint is opened the better appears to be the result. Personally, I intend to practice the surgical treatment in all the cases which come to hand, as Dr. O'Connor has been doing for the last three years or more.

RETROSPECT OF CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

Iodide of Iron in the Treatment of Certain Forms of Infective Arthritis.

WILSON, J. C., M.D. (Philadelphia). "Iodide of Iron in the Treatment of Certain Forms of Infective Arthritis." *Festschrift in Honour of Abraham Jacobi, M.D., LL.D., May 6th, 1900.*

Any means that will help in the treatment of infective arthritis, especially the gonorrhœal form, will be a great boon.

For a number of years Dr. Wilson has been treating cases of the latter disease with iodide of iron and with favorable results. In the paper in Jacobi's *Festschrift*, he gives an account of three cases treated in this way ; the leading features of the third case reported by Dr. Wilson will sufficiently illustrate the character of the arthritis and the result of the iodide of iron treatment.

The patient was a clerk, aged 21. He was admitted into the Philadelphia Hospital on the 19th of October, 1899.

He had gonorrhœa three years previously, followed by an arthritis which lasted eight months. Two months before his entrance to hospital he contracted a second gonorrhœa, which was still acute on his entrance and with it there was arthritis of both ankles and the smaller joints of both feet. He was first treated with strontium salicylate and salol with a slight but temporary improvement. A week after his admission the pains in the feet were severe, but the urethral discharge had ceased. He was given syrup of the iodide of iron in doses of ten minims three times daily. Two days later, there being no improvement, the dose was increased to twenty minims three times a day, and on the fifth day of November it was still further increased to thirty minims. Three days later he was improving and on the fifteenth day of November the arthritis, which had involved the left knee joint, had subsided so much that he was able to walk about the ward. Two weeks later he was discharged cured. The constitutional disturbances during his stay in hospital was slight, the temperature ranging between 97° and 100° F.

All the three cases, according to Dr. Wilson, not only illustrate the curative influence of the iodide of iron, but they also place the results of treatment by this medicament in striking contrast with the failure of ordinary remedies such as the alkalis, the salicylates, salophen and potassium iodide.

Chorea.

STARR, ALLEN M., M.D., LL.D. "Chorea." *Jacobi's Festschrift*.

This paper deals with 1400 cases of chorea, treated in the Nervous Department of the Vanderbilt Clinic during eleven years.

There are several features of this disease pointed out which, although not new, are worthy of being widely known. Emphasis is laid on the fact, that nearly always the disease is met with in poorly fed and badly housed children. In 60 per cent. of the cases a condition of anæmia was present. A general state of malnutrition appeared to be the most constant element in the etiology of the disease. Mental shock and overstrain at school did not appear to be at all frequent. In 290 cases there was a history of true rheumatism. One or both parents were found to have had true rheumatism in 263 cases. In 175 cases a cardiac murmur, which persisted after the cure of the disease, was found, while in 123 cases a murmur was found to be present during the course of the disease which disappeared afterwards. In 62 per cent. of the cases no murmur was found. This we believe to be a much smaller number than is usually found.

Dr. Starr believes that the increased frequency of the disease in the early spring months is due probably to the general state of malnutrition being at this period of the year more pronounced than earlier or later on, the child during the winter months being more confined than during spring or autumn. In 25 per cent. there was a history of previous attacks, and it was noticed that in almost all the relapsed cases, the various attacks occurred at the same time of the year and under practically identical circumstances.

Dr. Starr has found arsenic to be the most reliable medicinal drug. He gives it rapidly up to the point of intolerance, and then slowly reduces and continues it in doses sufficient to keep the child on the verge of intoxication. Mention is made of the varying susceptibility of different children to the action of arsenic. In two cases severe general arsenical neuritis appeared during the course of treatment, although these two children were not at the time taking as much of the drug as was administered without ill effects to many others. Recovery followed in both cases. Antipyrine next to arsenic, is looked upon by Dr. Starr as the most valuable remedy in chorea. Many other drugs were tried but without beneficial effects. The treatment of chorea in the outdoor room of

an hospital is quite a different matter from the indoor treatment. In the great majority of cases rest in bed with good feeding without the use of any drugs is sufficient to bring about a marked change for the better. It is uncommon to meet with cases that are not practically well in two weeks.

Acute Dilatation of the Heart in Influenza of Children.

FORCHEIMER, F., M.D. "Acute Dilatation of the Heart in Influenza of Children." *Jacobi's Festschrift*.

According to Forcheimer's observations, there are two forms of acute dilatation of the heart in influenza: "One presumably produced by the action of the toxin on the nervous system of the heart, and possibly upon the myocardium, the second form occurring in such conditions when the outflow of blood is materially interfered with on account of mechanical conditions."

The symptoms of the first group, in addition to the usual febrile symptoms of an influenza, are rapid breathing (60 to 70) without disturbance between inspiration and expiration. The pulse is rapid, frequently intermittent, but otherwise normal. Physical examination of the chest shows usually an entire absence of pulmonary signs. The cardiac dullness is found increased transversely, but rarely is any murmur to be heard. In the course of from 24 to 72 hours all these symptoms and signs disappear. The child returns to its normal state and remains well, or the various symptoms of a more prolonged attack of influenza develop. Dr. Forcheimer discusses the various views that have been advanced to explain the state above described, and considers that it is of nervous origin—a poisoning of both the respiratory and cardiac accelerating centres in the medulla. "The production of acute dilatation of the heart, as the result of disturbance in innervation has been proved in many instances."

The second form, which arises from states which interfere with the outflow of blood on account of mechanical conditions, presents a different clinical picture from what may be called the nervous form. It is a much more serious form, not infrequently proving fatal, especially in adults. There is, however, a much greater tendency to recovery in children. The symptoms are those of a cardiac collapse. The pulse is generally slow, sometimes very frequent and intermittent, and attacks resembling angina are sometimes present.

James Stewart.

Obstetrics.

UNDER THE CHARGE OF WILLIAM GARDNER.

Pregnancy Associated with Myofibromata of the Uterus.

SKENE, A. J. C. "The Management of Pregnancy Occurring in Connection with Myofibromata of the Uterus." *Am. Gyn. and Obstet. Jour.*, June, 1900.

That sterility is the rule in fibromata of the uterus is due to the position of the tumours in the uterine structure. As the result of a careful study of a series of cases, which he reports, Skene gives the following classification of the relation of fibromyomata to child bearing:—

(1) Submucous tumours, large or small, cause sterility as a rule.

(2) Small subperitoneal myofibromata do not always cause sterility, nor complicate child-bearing to a very marked degree.

(3) Interstitial tumours, unless so small that they cannot be detected, and large subperitoneal tumours closely connected with the muscular tissue of the uterus, do not cause sterility in all cases, but they are a most dangerous complication to gestation because they predispose to miscarriage and render delivery always difficult, often impossible, and always exceedingly dangerous.

The second class of cases requires attention during the early months of pregnancy to keep the uterus in position, and may require help during delivery with protection from post-partum hæmorrhage.

Skene strongly insists that all cases of gestation in connection with fibromyomata, that give no promise of going to full time, should be subjected to hysterectomy. In such cases, while operation may be undertaken as soon as the diagnosis of gestation is satisfactorily established, it is better, in order to avoid sacrificing a living embryo, to delay the operation until the first indications of miscarriage appear.

Rupture of the Uterus.

PUREFOY, R. D. "Clinical Reports of Rotunda Hospitals for One Year, Nov. 1st, 1898 to October 31st, 1899." *The Dublin Journal of Medical Science*, May, 1900.

This grave accident was encountered in two cases during the year, both instances being of an exceptional nature.

A primipara, aged 34, passed through an apparently normal labour of eleven hours duration, delivering herself of a child weighing 7½ pounds. Immediately before birth there were a few severe pains, but these did not

appear to cause undue distress. The placenta came away twenty minutes after the child, and but little blood escaped with it, the uterus remaining firmly contracted. Abdominal distention began a few hours later, but was not accompanied with pain, though on pressure slight tenderness was found low down on the left side of the uterus. Temperature, pulse and lochia were normal. Next morning, on making a uterine examination, the cervix was found not to admit two fingers, so the cavity was explored with a Bozemann catheter without detecting anything abnormal, though a rupture was suspected on account of the escape of a small quantity of blood-stained serum. On the third day the temperature began to rise, and on the evening of the fourth day ran up to 105° F., the pulse to 160, when she died.

Post-mortem, a complete rent was found in the left lateral wall of the uterus just within the os internum. There was a quantity of blood-stained serum in the peritoneal cavity; the uterus was well contracted.

The second case, a IX-para, aged 32, was delivered of a macerated foetus. Severe uterine pain was complained of in the evening, to quiet which opium was given. The following morning the foetus was found in the vagina, where it was delivered with gentle traction. The placenta followed soon after, but was accompanied with considerable hæmorrhage. A Bozemann catheter introduced into the cervix passed into the abdominal cavity. On examination the finger could be passed through a rent in the left lateral wall of the uterus, through which appendices epiploicæ prolapsed into the vagina. The uterus was lying on the right side and was well contracted. The appendices were returned and iodoform gauze strips passed through the rent into the abdominal cavity. That night the temperature rose to 102° F. Next afternoon a portion of gauze was withdrawn and a vaginal douche of sterilized water given. The gauze was completely removed on the third day and the convalescence was without any further incident.

Placental Transmission.

DORLAND, W. A. NEWMAN. "Placental Transmission." *The Amer. Gyn. and Obstet. Jour.*, June, 1900.

After a careful review of the recent literature on this subject, Dorland has prepared a most interesting and instructive paper.

That certain drugs and poisonous substances may be carried to the unborn foetus through the maternal blood, is an established fact. Morphine has been detected in the blood of the placenta and umbilical vessels taken from a parturient morphinomaniac. Mercury shows great affinity for the placenta; lead and copper tend to accumulate in the foetal tissues, while arsenic has been found chiefly in the foetal skin.

Thus copper and lead seldom produce abortion, but they lead to the

death of the fœtus before birth. Mercury and arsenic tend to produce abortion by giving rise to placental hæmorrhage. Potassium iodide passes very rapidly into the foetal circulation.

Certain diseases existent in the maternal system find ready access into the placental circulation. Scattered clinical observations have been confirmed by experiments upon gravid animals, and the results so far obtained are highly interesting. The typhoid bacillus has been noted by many observers in the placental blood and in the foetal tissues. In all the cases reported, no macroscopical lesions of the foetal organs were discoverable though large numbers of bacilli were present. Etienne supposes that death results from blood poisoning due to a large dose of the bacillus before local changes can take place. Freund and Levy are of opinion that characteristic lesions are not found because the functions of the foetal organs have not been established; hence they remain inert in the pathological process. The conclusion reached is that typhoid fever can undoubtedly be transmitted to the fœtus, and usually with disastrous results. On the other hand the fœtus may survive, though manifesting evidence of the disease.

Variola, scarlet fever, measles, erysipelas, recurrent fever, anthrax, tuberculosis, and syphilis, may be transmitted through the placental tissue to the fœtus, and usually with disastrous results. Intra-uterine infection with the diplococcus pneumoniae of Fränkel has been noted by many observers. Notwithstanding the presence of the germs in the foetal tissues, the specific lesions of pneumonia are generally absent in these cases. Streptococcus infection of the fœtus in utero has been reported by many observers. No lesion of the placenta was discoverable in any of these cases.

Infarcts of the Placenta.

WILLIAMS, J. WHITRIDGE. "The Frequency and Significance of Infarcts of the Placenta Based upon the Microscopic Examination of Five Hundred Consecutive Placentæ." *Amer. Jour. of Obstetrics*, June, 1900.

This interesting paper embodies the results of a careful macroscopical and microscopical examination of 500 placentæ with the object of ascertaining the significance and mode of origin of placental infarcts.

Williams distinguishes five varieties of these placental infarcts:—

(1) Small, whitish or yellowish, fibrous areas, occurring on the foetal or maternal surface of the placenta. These areas vary in size, while their thickness seldom exceeds a few millimetres.

(2) Areas in the placental substance which are wedge-shaped or irregularly round, dull white, and presenting a striated and fibrinous appearance, being sharply marked off from surrounding tissue.

(3) This same process involving one or more cotyledons, and connecting them into dense white fibrous masses.

(4) The condition known as "placenta marginata," which consists of the presence of a band of whitish or yellowish material around the margin of the foetal surface of the placenta.

(5) Pinkish or brick dust-colored masses, irregularly shaped, more or less solid, and sharply marked off from the surrounding tissues. These are usually most marked on the maternal surface but may extend through the entire thickness of the placenta. These masses are usually termed red infarcts.

Infarcts of one or other of these varieties were found present in 315 out of 500 consecutive placentaë (63 per cent.) Williams concludes that the primary cause of infarct formation is an endarteritis of the vessels of the chorionic villi. This endarteritis results in a coagulation necrosis of the portions of the villi just beneath the syncytium with subsequent formation of canalized fibrin. As the process advances the blood in the intervillous spaces becomes coagulated, and thus groups of villi are converted into masses of fibrin.

"Moderate degrees of infarct formation possess no pathological significance and exert no influence upon either the mother or foetus and are to be regarded as a sign of senility of the placenta, analogous to the changes which takes place in the villi of the chorion laeve at an earlier period.

Williams considers that marked infarct formation, which results in the death or imperfect development of the foetus, is usually associated with albuminuria on the part of the mother, though no satisfactory account of the relationship between them is apparent. He considers that there is no evidence of the bacterial origin of infarcts.

Pernicious Jaundice in Pregnancy.

JEANNIN. "Ictère aggravé a la fin de la grossesse—Mort de l'enfant pendant travail—Mort de la mère après l'accouchement." *Bulletin de la Société d'Obstetrique de Paris, No. 5, 1900.*

The patient, a primipara, aged 28, eight and a half months pregnant, was admitted to the Maternité in labour. Four days before her admission, having previously been in good health, she was seized with severe abdominal pains and headache. The same day a slight icterus developed. Her general condition remained good and there were no irregularities of the digestive functions present at this time. On admission, the woman was pale and jaundiced. The rectal temperature was 36° C., her general condition bad, her lips dry, and her tongue heavily furred. The foetal heart sounds were absent. The os being completely dilated, she was rapidly delivered by forceps of a lifeless, male child weighing 2600

grammes. The placenta followed shortly afterwards and was normal with the exception of a distinct icteroid tinge.

The night following her delivery the patient was seized with a convulsion characterized by disordered movements of the extremities and by jactitation, and altogether differing from an ordinary eclamptic seizure. By catheter, 250 grammes of bile tinged urine was withdrawn. It contained but a mere trace of albumin. The patient remained in a state of coma with subnormal temperature, and died 33 hours after her delivery.

Post-mortem, the liver was found to weigh but 827 grammes; its consistence seemed about normal. On section, it presented no microscopical alterations. Hystological diagnosis was acute infectious changes grafted on a chronic cirrhotic liver. The spleen was small, 220 grammes, and appeared normal. The kidneys, the right weighing 157 and the left 170 grammes, were white and glistening. The cortical substance had almost disappeared and what remained was pale and yellow. The medullary substance was congested, and some commencing disorganization of the pyramids was apparent. Histological diagnosis—mild hæmorrhagic glomerulo-nephritis.

D. J. Evans.

Reviews and Notices of Books.

PROGRESSIVE MEDICINE: A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES AND IMPROVEMENTS IN THE MEDICAL AND SURGICAL SCIENCES. Edited by HOBART AMORY HARE, M.D., assisted by CHARLES ADAMS HOLDER, M.D. Vol. I. March, 1900.

Professor Hare and his able staff of coadjutors have succeeded in placing an admirable and readable volume in the hands of the medical profession. The various articles are from the pens of men who have proved themselves thoroughly competent to treat their various themes, and the work reflects much credit on their industry and ability.

The surgery of the head, neck and chest, by Dr. J. C. DaCosta, treats of a large variety of subjects. In removal of the tongue for cancer Cheyne believes the mortality can be somewhat lowered by thorough cleansing of the mouth and tongue, and by preliminary injections of antistreptococcic serum. That even advanced disease of this nature can be successfully dealt with is shown by a case of Christopher Heath's, the patient living for twenty-three years without recurrence.

In purulent collections in the pericardium, Brentano resects the fifth costal cartilage under local anæsthesia, punctures the sac to ascertain the character of the fluid, incises the pericardium and in some instances sutures its edges to the skin. In purulent effusions DaCosta is inclined to think that irrigation with hot saline solution is advisable. This procedure has, however, proved unnecessary and even disastrous in empyema, and would seem to us to be unnecessary, even in purulent cases of pericarditis.

Dr. Frederick A. Packard contributes an interesting and instructive article on the acute infectious diseases.

Manfredi's observations on the influence of the lymph glands on microbism are summarised, and form an interesting study of their protective influence. The transmission of infectious diseases by insects is briefly referred to; the possibility of the spread of plague in this manner has a timely interest. Acute rheumatism is probably correctly placed among the infectious diseases, although not yet proved to be due to any special organism, as may be seen by a reference to the large number of organisms which have been regarded as its cause.

Advances in the means of diagnosis of the infectious diseases are well illustrated by references to typhoid fever, cerebro-spinal fever and measles. In typhoid Piorkowsky has described a method of isolating

the bacilli as early as the third day from the stools, and consequently several days in advance of the Widal reaction. If confirmed, this method will prove of much value in diagnosis. Neufeld's discovery of the bacilli in the rose spots, often preceding the appearance of the Widal reaction, is obviously not of any great practical value, as the appearance of the rose spots is conclusive evidence of the disease. Symptoms and treatment receive full consideration in this most progressive field of medicine, and we can only commend this section to our readers' perusal.

The Diseases of Children receive full attention at the hands of Dr. A. D. Blackader. Although the writer states that no striking advance has been made during the year, yet he has collected the best literature of the year bearing on the subject. Infant feeding, which was treated exhaustively in last year's edition, is briefly considered. A point of interest is that the great bulk of the bacteria are carried up in the cream. The necessity of sterilising cream for infants is thus a most important point, whilst the underlying milk, comparatively germ-free, is of less importance. The value of carbohydrates in an infant dietary receives confirmation from Keller's investigations, which go to show that these substances check nitrogenous waste.

To obtain sputum for examination in young children, two devices are described. Ebstein directs a curved forceps holding cotton wool to be pressed into the fauces after a fit of coughing, whilst Meunier recommends lavage of the stomach after the morning fit of cough. Among the rarer diseases of childhood, a case of aneurism in an infant of ten months is quoted, and an instance of scurvy in a six months' child, fed exclusively on breast milk of poor quality.

The other subjects treated in this volume are Pathology, by Dr. Ludvig Hektoen; Laryngology and Rhinology, by Dr. A. Logan Turner; and Otology, by Dr. Robert L. Randolph. These articles are all of a high class, but our space prevents a more extended notice.

A defect in the work appears to us to consist in dividing the main subjects among different volumes. We believe a wider sale might be obtained could the practitioner purchase one or two volumes, containing the subjects in which he is particularly interested, and thus obviate the necessity of loading his shelves with material which he will probably never read. We can, however, heartily recommend the work as one of the best annuals, giving in a comparatively brief form compass all the important work of the year. Another feature is the personal criticism of the various compilers, which greatly adds to the interest and value of the work.

ENCYCLOPÆDIA MEDICA UNDER THE GENERAL MANAGEMENT OF CHALMERS WATSON, M. B., M.R.C.P.E., Vol. 1. Abdomen to Bone. Published by William Green and Sons, Edinburgh. Canadian Agents, J. A. Carveth & Co. Price, \$5 per volume.

This work is designed to cover the whole range of medicine and surgery and of the various specialties, the different topics being arranged in alphabetical order.

The first volume contains a series of over fifty articles, amongst which are certain topics not usually treated in the ordinary text-books, *e.g.* Balneology and artificial limbs, and which will be found of much value for reference. The practical character of the work is evidenced by the introduction of articles on such subjects as the clinical examination of the abdomen, of the blood and of anæsthetics and anæsthesia.

Among such a large number of excellent articles it is impossible to refer to more than a few. Dr. Lecch contributes an excellent and thorough account on asthma, dwelling fully and clearly on its pathology, symptoms and treatment. Dr. Byrom Bramwell writes on aphasia, a task for which his well known publications are a sufficient guarantee for the quality. Dr. Shepherd, who is the only cisatlantic contributor to this volume, gives an excellent clinical account of appendicitis, dwelling fully on the surgical treatment. All inflammations in the right iliac regions are regarded as having their origin in the appendix and the terms *peri* and *para*-typhlitis are regarded as confusing and superfluous. Other articles of interest in this volume are Abdominal Aneurism, by Dr. Dreschfeld; Alopecia, by Dr. J. Galloway; Thoracic Aneurism, by Dr. G. Steel; Anæmia, by Dr. Lovell Gulland; Angina Pectoris, by Dr. L. Brunton, and Diseases of Bone, by Alexis Thompson.

As a work for convenient reference the encyclopædia can be recommended as thoroughly reliable. Whilst the pathological aspects are capably handled, the articles are thoroughly practical and bear the stamp of mature judgment and experience. They are tersely written, clearly expressed and free from the verbosity that mars and impairs the usefulness of so many medical publications. We believe the work will fill a want in medical literature, and can cordially recommend it to those of our readers who are anxious to have authoritative and easily available information on their library shelves.

The book is well printed in clear type and on good paper, and is neatly bound in cloth.

T H E

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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CANADIAN MILITIA ARMY MEDICAL SERVICE.

It is with a great deal of satisfaction we note that the Medical Services of the Canadian Militia is organized in its initial stage upon a good foundation.

The service as it at present exists consists of two distinct branches:—

(1) Militia Army Medical Staff Service which consists of (a) Militia Army Medical Staff and (b) Militia Army Medical Staff Corps.

(2) Regimental Medical Service.

The Militia Army Medical Staff Service consists of a Director-General stationed at Head-Quarters, Ottawa, who has complete supervision of all the officers of the staff and officers under him who are under his command, and exercise medical supervision in the positions allotted to them. It comprises also the whole of the officers (*personnel*) required for the Bearer Companies, Field Hospitals and medical administrative duties. The Militia Army Medical Corps consists of the non-commissioned officers and privates (*personnel*), specially enlisted and allotted to the Bearer Companies and Field Hospitals.

In accordance with the Royal Warrant of the 23rd of June, 1898, the officers of the Militia Army Medical Staff have combatant rank, and

the promotion of officers takes place on the same principle as that in a regiment or corps. The titles of lieutenant-colonel, major, captain and lieutenant are employed to denote the several ranks of office. They administer discipline and have the same prerogatives as those of the regular force.

The officers of the Regimental Medical Service retain their compound titles, surgeon-lieutenant, surgeon-captain or surgeon-major. Promotion in the case of Regimental Medical Officers is subject to qualifying examinations. Upon first appointment the regimental officer must be (1) qualified as a medical practitioner according to law, (2) he must also pass examinations on (a) regimental duties and discipline, (b) infantry drill (squad and company) (c) regulations for army medical services. A further examination, an extension of the foregoing, must be passed before promotion to the rank of surgeon-captain or surgeon-major.

On the other hand all appointments to the Militia Army Medical Staff are provisional until a satisfactory examination has been passed upon the following subjects:—(1) Infantry drill. (2) Manual for the Medical Staff Corps. (3) Military hygiene. (4) Routine and duties as laid down in the Queen's and Medical Regulations. (5) Military law. (6) Equitation.

In order to enable officers to qualify, classes will be formed in the centres of the different military districts and camps of instruction, and a course of instruction carried out under qualified instructors. In lieu of this course, certificates of proficiency are accepted from the Royal Army Medical Depot, Aldershot, England, or the Volunteer Ambulance School of Instruction, London, England. Officers who have served with an army in the field as medical officers may also be considered eligible.

Under the title Army Medical Corps is included, (1) Bearer Companies, (2) Field Hospitals. The *personnel* (peace) of a Bearer Company consists of one major, two captains or lieutenants, one sergeant-major, one quarter-master sergeant, one compounder, four sergeants, four corporals, one bugler and twenty privates, four forage carts, one water cart and ten ambulances. In war, the strength of the Bearer Company is increased by additional privates to a total of sixty-one non-commissioned officers and privates. The Army Service Corps adds thirty to the number and forty-five horses for transport.

The *personnel* (peace) of a Field Hospital consists of one major, two captains or lieutenants, one sergeant-major, one wardmaster (staff-sergeant), one cook (corporal), one clerk (corporal), and fourteen privates or orderlies and servants. In war, the strength of a field hospital is increased by one additional officer and twenty privates. The transport of a Field Hospital is provided by the Army Medical Corps, and consists of one forage cart, one water cart and four general service waggons.

The regimental medical officer is allowed two men per company wherewith to form a regimental stretcher-section. The men are instructed by the medical officers in the method of rendering first aid to the wounded. The duties in action of the two branches of the medical services are quite separate and distinct. The regimental officer with his stretcher service follows his regiment into action leaving the wounded, who have received first aid in the field, and who are picked up by the stretcher-section of the Bearer Company and carried off the field to what is known as a collecting station. Here all the ambulances are stationed and by them the wounded are transported to the dressing station, where the very urgent cases are temporarily dressed and afterwards transported by means of the ambulance waggons to the Field Hospital and there dealt with as occasion may require before being sent by train to the Base Hospital.

The uniform of the Militia Army Medical Staff and of the Army Medical Corps (bearer companies and field hospitals) closely resembles that of the Royal Army Medical Corps as it was previous to 1899, with the addition of a distinctive collar and cap badge, namely a maple leaf with the Geneva cross in the centre.

Regimental medical officers uniform themselves in accordance with the regiment to which they are attached, wearing the regulation cross-belt, sword-belt and head-dress of the Army Medical Staff.

The following Bearer Companies have been organized :—

No. 1 Co.....	Head-Quarters	Halifax.
No. 2 Co.....	Head-Quarters	Ottawa.
No. 3 Co.....	Head-Quarters	Montreal.
No. 4 Co.....	Head-Quarters	Toronto.
No. 5 Co.....	Head-Quarters	Quebec.

The following Field Hospitals have been organized :—

No. 2 Co.....	Head-Quarters	Kingston.
No. 3 Co.....	Head-Quarters	Montreal.
No. 4 Co.....	Head-Quarters	Montreal.
No. 5 Co.....	Head-Quarters	Quebec.

During this Session authority for organizing four additional bearer companies and four field hospitals will be given, and the task of detailing officers and recruiting for these units will engage the attention of the Director-General.

The enthusiasm shown for enlistment has been most marked in several centres where the number of applicants received has been far above the required numbers. In Montreal for example, was nearly fifty per cent. above the required strength. The bearer company for No. 5 Military District (Montreal), has been particularly fortunate in obtaining very suitable quarters in the University Gymnasium through the kindness of the authorities of McGill University.

The formation of a staff of nurses in connection with the Army Medical Service is contemplated and will doubtless be organized at no distant date, and it is reasonable to believe that those of the Canadian nurses who will return from South Africa will be among them.

H. S. Birkett.

THE SANITARY INSTITUTE, LONDON.

CONFERENCE IN LONDON ON THE HOUSING OF THE WORKING CLASSES, AND VISIT TO PARIS.

The Sanitary Institute of London, has arranged to hold a Conference on the Housing of the Working Classes at the Institute, and in connection with it an exhibition of models and designs will be formed in the Parkes Museum of the Institute. The Conference will be held at the end of July, and will continue for two or three days, probably those immediately preceding that on which the Sections of the Annual Meeting of the British Medical Association, which meets this year at Ipswich, begin (Aug. 1st). Papers will be read and discussed in the mornings, and visits to typical buildings will be arranged for the afternoons, and also demonstrations of the plans and models.

Plans and models coming under any of the following heads will be accepted:—

Unhealthy Areas and Improved Areas.

Urban Dwellings on the System of Self-contained Flats—Associated Flats—Family Houses—Poor Mens' Hotels—Common Lodging Houses—Shelters.

Suburban Dwellings.

Rural Dwellings.

Hop and Fruit Pickers' Temporary Dwellings.

Model Estates, Villages.

MODELS AND PLANS ILLUSTRATING THE APPLICATION OF BUILDINGS, ACTS AND REGULATIONS.

Silver and Bronze Medals will be awarded by the Institute for Improved designs.

The Sanitary Institute has also accepted an invitation from the Société Française d'Hygiène to hold a Conference in Paris on Tuesday, Wednesday and Thursday, August 7th, 8th and 9th. The date of the meeting has been so arranged that it will follow the Conference and Exhibition on the Housing of the Working Classes to be held at the Institute and the Annual Meeting of the British Medical Association, and immediately precede the meeting of the International Congress of Hygiene and Demography in Paris. Matters relating to municipal sanitation and other sanitary work will be discussed in the mornings, the

afternoons being left free for visits, (which the Société Française d'Hygiène will arrange) to important sanitary works. The French Society will also provide a reception room for the members and associates of the Institute so that they may be able to meet together during their stay in Paris. Foreign guests wishing to join the Conference of the Sanitary Institute in London or in Paris, can obtain further particulars from Mr. E. White Wallis, F.S.S., Secretary. The Sanitary Institute, 74A, Margaret Street, London, W., to whom all communications should be addressed.

According to the *Australasian Medical Journal*, there are 902 registered medical practitioners in New South Wales, or about one practitioner to 1536 people.

At a meeting of the graduates of McGill University residing in Chicago and vicinity, a McGill University Alumni Association was formed, and the following officers elected :—

President, Dr. R. D. MacArthur; 1st Vice-President, Mr. Christopher McLellan; 2nd Vice-President, Dr. Leonard St. John; Sec.-Treasurer, Dr. T. A. Woodruff; Councillors, Drs. Wm. Copeland, D. R. MacMartin and J. Brown Loring.

The Royal College of Surgeons of England, in celebrating its centenary, has for the first time in its history, decided to confer the honorary degree of F.R.C.S. on certain representative and distinguished surgeons.

We heartily congratulate Sir William Hingston and Dr. T. G. Roddick, who have been chosen as two of the Canadian recipients of this highly prized title.

Obituary

CLARENCE CHURCH, M.D.

Dr. Clarence Church who recently died in Ottawa at the comparatively early age of 52, was one of the most widely and favorably known of the many graduates of McGill.

Soon after taking his degree in 1868, Dr. Church commenced the practice of his profession in the village of Ashton, County of Carleton, but finding this sphere too limited, removed to Ottawa in 1873. Here he soon commanded a large clientele, and at one time had, with one or two notable exceptions, the largest and most lucrative practice in the Ottawa Valley. Among his patients were included, from time to time, some of the ablest statesmen of Canada, whose official positions made them residents of the Capital. Our lamented friend kept himself thoroughly posted in his profession, being a constant reader and an accurate observer. He was always eager to learn and adopt new and approved methods in both medicine and surgery. When his numerous engagements permitted, he never lost an opportunity of attending professional gatherings in Canada and the United States, and on two occasions crossed the Atlantic to be present at meetings of the British Medical Association. In 1897, he was unanimously elected President of the Ottawa Valley Branch of that association, and it will be remembered that one of the most pleasant outings connected with the Montreal meeting of the British Medical Association, in 1897, was a trip to the Capital at the invitation of the Ottawa Valley Branch. Dr. Church was one of the most prominent Masons in Canada and was considered an authority on Masonic matters. Being a direct descendant of a United Empire Loyalist, he was a Conservative of the Old Tory School, and on several occasions was offered a constituency in that interest, but persistently refused, having no desire to enter the hurly-burly of political life. His father, the late Dr. Basil R. Church, was for many years a member of the old Canadian Parliament. He was a delightful companion, being well read and well informed, besides possessing a large store of personal recollections and anecdote.

For two or three years previous to his death, Dr. Church had been in poor health, the result mostly of an accident which caused very severe general shock and permanent injury to one of his limbs. The immediate cause of death was valvular heart disease. He leaves a widow and four daughters to mourn his loss.