ANNUAL ADDRESS.

LICENSE TO PRACTICE.

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THE LICENSE TO PRACTISE.

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Mr. President and Gentlemen:—I shall not offer any apology for making the "License to Practise" the subject of my address, as it is one in which all, high and low, rich and poor, lay and professional, are deeply interested. I am fully aware that it is a subject thought to require the delicate handling which we are accustomed to give to topics arousing heated discussion, and upon which diametrically opposite views are held. Still as the question agitating the profession to-day, it requires to be persistently and thoroughly ventilated, and those who have opinions on the subject should speak out in no uncertain tones. I have not had an opportunity of ascertaining the feelings of the members of this ancient and honorable Faculty on the question, one which touches closely, I believe, certain vested rights of this body; but I have learned that three years ago a Bill for a State Board was rejected, so I presume the matter has often been before you. I am the more emboldened, therefore, to speak freely, knowing full well that I address men who have given time and thought to the problem, who know its difficulties, and who appreciate its importance.

In this country a man can follow the vocation he pleases, subject only to such restrictions as may be necessary for the public welfare. The right to regulate the practice of medicine rests with the State, and I believe it is acknowledged that this right comes within that general police power which extends protection to the life and limbs of the citizens. At present, this power is very variously exercised in different States. In
many, no regulations whatever exist. Any one who wishes, irrespective of qualifications, can practise. In a majority, however, there are restrictions which demand evidence on the part of the practitioner that he has studied, for a longer or a shorter period, at an incorporated school. Practically, the rule prevails that with a diploma from a chartered school he can begin at once, without any hindrance other than that relating to registration. The educational duties of the State do not here extend beyond the system of common and normal schools, though, in a few, higher university work is also undertaken. Special education does not receive support from the public revenues. Schools of law, medicine, engineering, theology, all the special branches of study, are private enterprises, chartered by the State and maintained by fees from pupils, or by the munificence of private friends. Certain privileges are granted to these Institutions by the State, the most important of which, in the medical school, is the recognition of the diploma as a qualification for practise. So unsatisfactory, however, has this system proved, that there is on the part of the public, and of the profession, a growing sense of the necessity for radical changes, as shown by the number of States in which bills have either been already passed, or have been before the legislatures dealing with the problem.

It is universally conceded that the basis of legislation is the necessity of protecting the people against the depredations of ignorant graduates and of quacks. The aim is to provide a minimum standard of qualification to be exacted of all persons who desire to follow the calling of physician and surgeon.

Whilst we find Legislatures everywhere willing to support enactments necessary for the safety of the public, they will not (and it is right that they should not) support class legislation; and herein lies one of the chief difficulties.

If we look around upon those engaged in the practice of medicine, we find that an overwhelming proportion belongs to the regular, or so-called, old school. A second small division professes to follow the precepts of Hahnemann; while a third, still smaller, neither one thing nor the other, but a little of both, professes a judicious eclecticism. These three bodies have schools, medical journals, and in each State a more or less complete organization. In the eyes of the law (which
rightly disregards medical theories), all are equal. This un­
happy division of the body medical is not limited to profes­
sional matters, but is complicated with ethical questions of the
highest moment. The outcome of it all has been that there
are hostile camps and bitter war.

The homœopathists and the eclectics, will, I think, concur in
the necessity of a full and proper curriculum of study in the
great branches of medicine. Anatomy, physiology, chemistry,
histology, embryology, medicine, surgery, obstetrics, gynaec­
ology, and medical jurisprudence know no "isms." The
differences only become glaring when we touch the subject of
Therapeutics, a subject in which amongst members of each of
the so-called schools the greatest individual differences of
opinion exist. So strong, however, is the feeling (largely an
ethical one), that the divergence of opinion on this one branch
separates absolutely the different classes of practitioners from
each other; and I do not say that this should not be so, while
antiquated dogmas are professed in opposition to a rational
and a free science.

We cannot, however, escape from the important fact that in
the eyes of the law we all stand equal, and if we wish legislation
for the protection of the public, we have got to ask for it to­
gether, not singly. I know that this is gall and wormwood to
many—at the bitterness of it the gorge rises; but it is a ques­
tion which has to be met fairly and squarely. When we think
of the nine or ten subjects which we have in common, we may
surely, in the interest of the public, bury animosities and agree
to differ on the question of Therapeutics.

In connection with the license to practise, there are, it seems
to me, three courses open: 1. A continuance in the plan at
present, widely prevailing, which makes the college the judge
of the fitness of the candidate; and State supervision is only so
far exercised that the diplomas are viséd, and registered, if
from legally incorporated schools. 2. The appointment by
the State or by parties so deputed of a board of examiners,
which shall, irrespective of diplomas, examine all candidates
for the license. 3. The organization of the entire profession
in each State into an electorate, which shall send representa­
tives to a central parliament, having full control of all questions
relating to medical education, examination and registration.
These various places are at present in operation in different parts of the Continent; let us see how they work.

And first of the colleges, which have practically had a monopoly for years, as the diploma has carried with it the privilege of registration.

To all intents and purposes the medical schools of the country are private organizations, managed in the interest of the professors, who, with scarcely an exception, have direct pecuniary interests in the size of the classes. The greater the number of students and graduates, the larger the fees, and the higher the income of the teachers. The running expenses and the interest on the moneys expended for the teaching-plant are the first call, after which the balance is divided. These chartered corporations are wholly irresponsible, without supervision by the State, the profession or the public. It would not be difficult, without fear of just rebuke, to bring a railing accusation against them for persistently acting in their own, and not in the interests of the public. But the time has passed for this. Yet, it is surprising to think that so many men, distinguished in every way in their profession, cultured and liberal, still cling to, and even advocate, the advantages of an irresponsibility, which has made the American system of medical education a by-word amongst the nations.

Let me not be misunderstood. These very men are, in many instances, those whom we delight to honor, with names which will last as long as American medicine. Yet, to an unbiased mind, there can be no hesitation in affirming that the system which has been permitted to develop in our midst has done, nay, is doing, irreparable wrong. But, it may be urged, on the part of the schools, that they are what the profession wishes. The stream does not rise higher than its source. I do not think that this holds good at present. It does not require a very wide professional acquaintance to gather, that there is now developing, throughout the length and breadth of the land, an earnest desire to support a higher medical education, and this is borne out by the success which has attended the tentative efforts in this direction of the larger schools, which have made a three years' college course compulsory.

Here, let me remind those doctors who talk loudly of medical reform, of the selfishness of schoolmen, of the difficulty in
getting; colleges to advance, that very much rests with the degree of support given by them to those schools which really make sacrifices for the elevation of the standard. If, for instance, the University of Pennsylvania or Harvard, or the College of Physicians and Surgeons in New York, or the University of Maryland, were to extend to four full years the course of study, there would be at each of these schools, without the slightest doubt, a falling off in income, from the reduction in the number of students; so much so, that it would be impossible to run these large establishments at their present full equipment. Manifestly, it would be suicidal, without the guarantee of outside aid, to imperil corporate interests of such magnitude. But if, on the other hand, those physicians throughout the country, who strongly favor a four years' course as the minimum in which a man can obtain a reasonable knowledge of the science and art of medicine, if these men were to direct their students to such institutions (and in this matter we all know how much influence the physician has), the problem would be at once solved.

Too often college faculties seem stricken with timidity in the presence of suggestions to lengthen the curriculum and to raise the standard. Yet, a superficial study of the history of the movement since 1871 and 1872, when Harvard so nobly took the lead, should be convincing to all that even from the lowest considerations the advance should be successful. You have but to look to the condition of the schools which have been in the van, to see that the bread cast upon the waters has already been found. I do not say that these schools are in all instances the most prosperous numerically. Heaven forbid; that is not a standard of merit. But, take the laboratory equipment, the measure in which they fulfill medical requirements, the practical teaching and the development of clinical instruction, and I say, without fear of contradiction, that these schools have met with an ample and a just reward. And yet, these are the very schools which clamor loudest for further advance, showing how dangerous it is to arouse the slumbering conscience, and to abandon the conviction that a two session course is sufficient for the average American student. But in spite of all that has been done, in spite of the agitation which has been so active during the past ten years, the sad truth must be told, that a
large percentage of doctors are graduated annually after only two sessions of study.

On paper, the two session schools almost universally demand three years; one of which, it is stated, may be with a physician. Now, it is notorious in these schools that a large majority of the men receive the degree at the end of the second college year, and it is just as notorious that not 5 per cent. of the cases in which a preliminary year of study has been passed with a physician is a bona-fide period of medical instruction. It practically amounts to this, that a man enters without any fair preliminary test as to elementary education, say on the first of October of the present year; and eighteen months from date, or rather seventeen months, sometime in March, 1891, he will be let loose upon the commonwealth. Eighteen months in which to master one of the highest, as it certainly is one of the most difficult of the professions which man is called upon to practice! That, gentlemen, these are facts, sad facts, each one of you knows. Yet so blind do men seem in this matter, so wedded to this pernicious system, that I have known physicians in large practice, able, cultivated men, contributors to medical literature, standing high in the esteem of their brethren, permit their sons to follow out this curriculum. Picture, if you can, the mental condition of such a graduate; an incoherent jumble of theories, a chaotic assortment of what he would call practical tips. But this question has its tragic side, which completely overshadows everything else. It makes one's blood boil to think that there are sent out year by year scores of men, called doctors, who have never attended a case of labor, and who are utterly ignorant of the ordinary every day diseases which they may be called upon to treat, men who may never have seen the inside of a hospital ward, and who would not know Scarpa's space from the sole of the foot. Yet, gentlemen, this is the disgraceful condition which some school men have the audacity to ask you to perpetuate; to continue to intrust interests so sacred to hands so unworthy. Is it to be wondered, considering this shocking laxity, that there is a wide-spread distrust in the public of professional education, and that quacks, charlatans and impostors possess the land?
But the handwriting is on the wall, the interpretation has been read, and the prophecy indeed is in course of fulfillment. It needs not the vision of a son of Beor to advertise that within ten years in scarcely a State of the Union will the degree carry with it the privilege of registration; and with this removal of the kingdom from the schools will dawn a new era for the profession in this country. This will happen when unrestricted competition between the colleges and the total absence of professional and State restraint are things of the past.

Under the second plan the entire question of registration is placed in the hands of examiners, appointed by the Governor, or by the State societies. Such a board, to be effective, must constitute the only portal to practice. The practical working, as shown in North Carolina, Virginia and Minnesota, presents no difficulty, and it constitutes an effective barrier against the inroads of poorly qualified graduates. Within a few years this measure will be widely adopted. It has certain advantages in a simple mechanism, and in clearly defined duties. But the powers are too limited, and there is no control of education, preliminary and special, such as comes strictly within the power of the profession in each State.

The record of the Virginia Examining Board for the four years ending October, 1888, is an excellent illustration of the good which may be done. Of 240 candidates examined, 54, or 22 per cent., were rejected, a percentage which might be increased considerably if practical examinations were instituted in the practical branches.

Ultimately I believe a more elaborate plan will prevail, more difficult to organize, but practical, and possessing the great advantage of giving the control of the profession into the hands of the practitioners, and of doing away forever with the minority rule of the college.

Theoretically, there can be no question (particularly in democratic communities) that a State board should be elective, not appointed by the Governor or the societies. An elective board is in reality a medical parliament, which should take cognizance of all matters relating to medical education, and perhaps, though of this I am not so sure, of questions of public health within the State. The assembly districts, or other territorial divisions which might be made, would send one, o
perhaps two, representatives to the board (depending upon the professional population in each district). The electors would be constituted by all practitioners irrespective of schools, which had registered at a certain date. A man who had practiced, even without a diploma, for a certain time would, under these circumstances, have to be recognized and permitted to register. The Governor of the State would issue the first warrant for the election, which would subsequently be the prerogative of the executive of the board. It might be necessary, at first, to have, from each district, members returned from at least three of the divisions which at present constitute practitioners. The representation should be per capita, the number of constituents in each electorate to be previously arranged. The term of the board should be, at least, four or five years, and members should be eligible for re-election. Conducted by ballot, there should not be the slightest difficulty in carrying out such an election. There would be, of course, active canvassing; and perhaps, many nominated from one district. Though there would be opportunities for political trickery and gerrymandering, I think, on the whole, it would be found that an election could be conducted with tolerable purity. The universities and schools would have full representation on the board. To such an organization, I believe, might be intrusted the control of all matters relating to medical education in the State. It would correspond to the law societies, and to the synods and conferences of the various religious denominations. The powers of such a board would be accurately defined by legislation, and should relate first to preliminary education; secondly, to the examination and registration of candidates for the license to practice; and thirdly, the control of all matters relating to discipline with the profession. The necessary expense would be met—first, by the fees paid by the candidates for examination; secondly, by a small annual tax levied upon all registered practitioners. Such a body could look forward hopefully to a permanent establishment in each State, with buildings suitably equipped for examination, and with every possible provision for conducting, in an orderly and systematic manner, the business of the profession.

The first important function of the board would be the regulation of the minimum standard of education required on
entering the profession. It is perfectly legitimate that the pro-
employment should say, through its representatives, what should be
the qualifications of a candidate who desires to enter upon the
study of medicine. In law this holds good; why should it not
be so with us? A guarantee of uniformity would thus be given
which cannot be expected in the schools. The examiners at
the preliminary test should be independent teachers, not pro-
fessional men, and the examinations could be arranged in
different parts of the State. The period of study would date
from the passing of this preliminary examination. Such a
measure would effectually prevent the entrance of men whose
education was such that they could not subsequently grapple
with the subjects of professional study.

The examination and registration of candidates would con-
stitute the most important function of the board.

Upon no question will there be a greater diversity of opinion
than upon the selection of examiners. The opposition to
State Boards on the part of school men is very largely based
on the doubt which they have as to the selection of thoroughly
equipped men for this work. On the part of the profession
such a feeling exists that would prevent the appointment by
the board as examiner on his own subject a teacher in any
school. The difficulties, however, are not insuperable. With
the proper system of numbers for written examinations, and
with two examiners at every oral, there could not be the
slightest objection, so far as I can see, to the selection of
school men as examiners in certain of the branches. In anat-
omy, chemistry, physiology and pathology, that is to say in all
the scientific branches, it would be almost impossible to secure
from the general profession examiners with the necessary
training. It certainly would be most unjust to well-equipped
students from the laboratories of our first-class schools to sub-
ject them to examination on these branches by men who had
crammed on purpose from two or three of the most recent text
books. On the other hand, in the more practical subjects,
there are certainly in each State to be found men fully capable
of conducting the necessary test work. I have the honor to
know personally, in many States of the Union, men to whom I
would entrust with the utmost confidence the examination of
my students in the theory and practice of medicine, and I
doubt not that in surgery, midwifery, gynaecology, and in the polyglot subject of therapeutics men equally able in these departments would be forthcoming.

There need not be any difficulty in the existing differences between the various schools of practice. All students would be examined in the great primary divisions, anatomy, physiology and chemistry, and so also in pathology and morbid anatomy, obstetrics, and in operative gynaecology and in medical jurisprudence.

The examinations in these branches would be uniform. In therapeutics only would there be separate tests for regulars, homœopathists and eclectics. On application, the student would have to indicate for which of the three he wished to apply, and, if successful, would be placed in one of the three divisions of the State Register. I am free to confess that this scheme may, to some, seem Utopian, but I am firmly convinced that the majority of those that hear me to-day will live to see State Boards organized on this, or upon a modified plan.

With the third function of the Board, viz., that relating to discipline, I need not detain you further than to say that in any effective act there should be penal clauses giving authority to prosecute irregular and unlicensed practitioners; to remove for cause a name from the register; and to exercise such additional powers as might, in the opinion of the framers of the bill, be thought justifiable.

Now the entire feasibility of such a scheme is illustrated by the professional history of the Province of Ontario. Up to 1865-6 there was a Licensing Board appointed by the State; which dealt, however, in examinations only in the case of candidates without diplomas, but to all intents and purposes it was simply a Board of Registration to which holders of degrees presented themselves, paid a small fee and obtained the license. The schools practically controlled it.

In the session of 1865-6 the profession of the Province sought incorporation, and the Act was framed which, with certain important modifications, at present remains in force. It practically hands over to the profession, through the elected representatives, the management of their own affairs so far as they relate to preliminary and professional examinations and certain disciplinary enactments. In spite of the strenuous oppo-
sition on the part of many who felt that it was a most degrad-
ing thing thus to lop the important privilege hitherto held by
the Universities which enabled graduates to obtain the license
without further examination; in spite of dissensions and dis-
satisfaction, such as are almost inevitable in connection with a
new organization, the Board has persisted in its good work,
and to-day, after 23 years of existence, it has a record of which
the entire profession of the Province is most justly proud.
On no point was opposition more bitter or more prolonged
than on the admission to representation of members of the
homœopathic and eclectic bodies. My very first introduction
to the profession was a visit with my preceptor to the commit-
tee room of the House, in which certain amendments to the
Act were being pushed by the colleges. I can recall with vivi-
dness the heated dispute with reference to this very question of
admission of the homœopathists and eclectics to proportionate
representation. It was thought to be a defilement even to come
near unto the unclean thing. But wise counsels prevailed, and
representation remained general, as it was, though it is true, I
believe, that the eclectic body no longer has practitioners
enough in the Provinces to send a representative.

The influence which this organization has exerted has been
in the highest degree beneficial, and the schools now accept
the inevitable with a perfectly good grace. The Board pos-
sesses a magnificent central building in which to conduct the
examinations, with offices for registration and rooms for a
Provincial Library. The fees from the examinations and a
small annual tax levied on each registered practitioner have
proved sources of ample income.

The same condition, with modifications, exists in the other
British Provinces.

To those who look upon such a scheme as I speak of as
Utopian, and urge difficulties on account of the deeply-seated
prejudices and wide dissensions existing between the schools,
I might say that the condition here is practically the same in
kind, though perhaps greater in degree, to that which existed
in the British Provinces prior to 1866. What has been done
there so successfully can be equally well accomplished in every
State of the Union.
The great gain is the public guarantee that when a man has received the license to practise, he has, at any rate, the elements of a solid education; that he knows the structure and functions of the human body; and that he is capable of meeting the ordinary emergencies of professional life. Such a plan removes the irresponsibility of the schools, establishes a uniform curriculum of studies in each, and exacts a minimum time for theoretical and practical work.

The difference is simply this, that under our present system independent and irresponsible schools have the upper hand and dictate terms to the profession and to the public, and do whatever they please. With an organized profession, through its representatives in session, the schools take the second place—they exist for the profession and the public. There can be no question as to the great superiority of this method. It is essentially democratic, and should commend itself in every particular to the profession of this country. It is infinitely superior to the second method carried on at present in many of the States, although the Examining Boards nominated by the Governor or the societies are better than unrestricted registration. While the interests of corporations are fully represented in this system, they have not the overshadowing power such as was granted in Great Britain by the recent Act in which it seems almost ridiculous to think that only six representatives from the profession at large found a place in a Board, and this number grudgingly granted as a privilege, not as a right.

It does not do, however, to underestimate the difficulties which have to be encountered in any attempt to organize these Boards. It may be premature in many States. The profession, I have frequently heard it stated, is not ready for it. This, from my own observation, I should doubt. I believe the general body of the profession, when it fully understands the question, cannot but agree that the method is in reality a safe one. I am sure that the public, through the press, will heartily concur in any plan which will guarantee that the practitioners to whom they entrust life and limb shall be educated men.

Opposition will be strongest on the one hand from the schools, which look askance at any measure likely to interfere with their prerogatives, and on the other hand, the members of the homoeopathic and eclectic fraternity, not unnaturally dread
lest in any such arrangement a full measure of justice should not be meted them.

The antagonism of the schools is not, I believe, serious. To be effectual they would have to be united. It is notorious that many of the Faculties, or perhaps, more truly, many of the prominent members in each Faculty, urgently support State Boards, and a return to the old and normal condition in which a university degree partook somewhat of the nature of an honor, and had no relation to the license to practise. The opposition from the homœopathists and eclectics need not be serious. They profess to seek for better things and to look for a higher standard of examination. If we are truly anxious to deal fairly with them in a matter, not relating so much to our own as to the interests of the public, I am quite sure that we shall find them ready and willing to join hands in such a laudable work. Nor must we talk to them of concessions, but acknowledge plainly their rights, which before the law are the same as our own.

To move surely we must move slowly, but firmly and fearlessly, confident of the justness of our claims on behalf of the profession and of the public, and animated solely with a desire to secure to the humblest citizen of this great country in the day of his tribulation and in the hour of his need, a skill worthy of the enlightened humanity which we profess, and of the noble calling in which we have the honor to serve.
CASE OF SYPHILOMA OF THE CORD OF THE CAUDA EQUINA—DEATH FROM DIFFUSE CENTRAL MYELITIS.

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THE following case which was under the care of Dr. S. Weir Mitchell, at the Infirmary for Nervous Diseases, Philadelphia, presents many points of clinical and anatomical interest.

Clinical Summary.—Chronic alcholism, history of syphilis. For nine months pains in the legs, particularly in the left, which wasted rapidly, and presented vaso-motor changes. Pains in the arms, especially the right; no wasting, and, on admission arms of equal strength. About two months before death loss of control of bladder and rectum. Within the last month of life loss of power in the right arm, with pains; partial loss of power in the left arm with marked inco-ordination, complete paralysis of the left leg, gradual loss of power in the right. Development of bed sores. Arthritis in knees and ankles. Towards the close of life, high fever with delirium.

Anatomical Summary.—Gumma in antero-lateral columns of cervical cord opposite the right fourth anterior nerve root. Gummata involving the third, fourth and fifth anterior sacral nerve roots, and the second and third posterior sacral roots on the left side. Ascending degeneration of the left posterior median column. Central myelitis. Partial atrophy of the sciatic nerves.

A. B., æt. 42, lawyer, admitted February 5, 1888. Family history good. Had been a hard drinker for years and had smoked and chewed to excess. He had gonorrhoea four times, and a soft chancre but no history of secondaries could be obtained.
In 1876 he had delirium tremens. About April, 1887, he began to have sharp, shooting pains in the arms and legs. They came on suddenly, were stab-like in character, lasting only a moment and then passing off. No definite regions in the arms and legs were involved. He also had dull pains in the back of the head and neck. These troubled him more or less throughout the summer, but he could get about fairly well. Towards the second week in October the pains began to be more severe in the left leg; they were thought to be rheumatic in character. About the twenty-fourth of October, his suffering was so great that he was confined to bed. By November 5th he could scarcely walk. The pain began in the right arm and shoulder, the right leg also was painful and weak. There was no redness or swelling of the knees, but the left foot and ankle would get red and swollen, almost purple. The left leg wasted rapidly and for a time he lost sensation in the legs completely. The left arm remained unaffected. About a month before his admission he lost control of his bowels and had a constant desire to urinate. He had to use the catheter for several weeks.

The following notes of his condition were taken on admission by Dr. Burr, Resident Physician.

"He can stand a little with the aid of a chair and he can flex and extend the right knee and hip. He cannot move the left leg, the knee of which is swollen. He has very little pain, none in the right leg. The wasting of the left leg is marked. The knee-jerk is present on the right side but on the left side it is obtained with difficulty. On the right side cremasteric reflex is present, absent on the left. Abdominal reflex present on both sides. No tender spots over spine; bed sores on the coccyx and on the left buttock; has pain in the shin bones and in the groin at night. The arms show almost equal strength. The dynamometer registers 115 for the right hand and 120 for the left.

For two weeks he seemed to be in much the same state though in rather less pain. Towards the end of the month the ankles and knees became more swollen; the bed sores had healed.
On March 16th, the note is as follows: "Has been unable to move the right knee or thigh since yesterday; the swelling has subsided in the knee but the ankle remains swollen; the fingers of the left hand have been numb since yesterday; pain along the inner side of both arms and at the points of the elbow; pain in the left shoulder for several days; right hand is powerless; fingers held flexed in palm; can move the right shoulder; is losing power in the left arm and hand; movements are distinctly ataxic; there is pain on spine over the seventh cervical vertebrae, worse on pressure."

From the 17th to the 20th the temperature rose gradually, reaching 102°, and at this date he lost sensation in the ulnar distribution of both hands.

21st.—Delirious, but can be easily roused, when he will talk rationally for a few minutes; tongue red, dry and coated; pupils contracted; pulse rapid and feeble; gangrenous bullæ on the outer side of heel; temperature rose this morning to 105° and remained high all the morning. At 2 P.M. it reached 106.8°. Cold sponging and antipyrin reduced it to 102° by evening.
22d.—The delirium persists and bed sores have again appeared on the sacrum; the scrotum is œdematous; he has difficulty in swallowing; the breathing is diaphragmatic; does not complain of pain; temperature, to-day remained below 104°.

23d.—General condition unchanged; is unconscious and is roused with difficulty; morning temperature was 102° rising gradually during the afternoon till it reached 105.6° at 7 P. M.; at 10 P. M., it was 106.8°

24th.—Low, delirious fever continues, reaching at 12 M. 107° and continued elevated during the afternoon. At 10 P. M., the rectal temperature was 108°; at 12:30 A. M., 108.4°; at 2 A. M., 108.8°; at 3 A. M., 109.4°. See chart. Death occurred at 4 A. M.

Post-mortem, five hours after death.

Body emaciated, left leg smaller than the right; scrotum œdematous; superficial gangrenous bullae on each heel; recent bed sores on sacrum.

The skull cap was removed with difficulty, as there were strong adhesions to dura.

Logitudinal sinus contains blood. Parts at the base of skull normal; cortical arachnoid, opaque. Pachionian granulations abundant and large; pia mater turbid, strips off readily from hemisphere, but is somewhat œdematous. Convolutions look healthy, and the gray matter is of a rosy pink color; white substance moist, with very few bleeding points; lateral ventricles look dry; third and fourth ventricles present no changes; in the latter, the vessels just above the acoustic striae are a little congested.

Section of the ganglia at the base show no foci of disease; pons and medulla symmetrical; no descending lesions. Cerebellum normal.

Spinal Cord.—Dura mater natural looking, nowhere adherent except at the anterior part of cervical enlargement; no sub-dural exudation; arachnoid thin and clear. On the right half of the cervical enlargement the dura is attached to the arachnoid and to the pia over an area the size of a split pea. There is here a firm solid mass in the cord, not producing any special deformity, but appearing extern-
ally as a grayish region, situated between the anterior roots of the third, fourth, and fifth cervical nerves. The fourth is involved in the adhesion of the dura. The anterior roots are not involved, nor does the adhesion of the dura extend laterally beneath the dentated ligament. The grayish translucent appearance of the mass extends for about a line beyond the posterior median fissure. Vertically it is about one-third of an inch in length.

Fresh sections were made at the following points:

*Second Cervical.*—Interior soft, but outlines of gray matter distinct. The left column of Goll has a grayish-white translucency.

*Sixth Cervical.*—Gray matter has lost its firm appearance, and is very soft and reddish in color.

*Seventh Cervical.*—Central softening still apparent. Cornua not distinguishable.

*Second Dorsal.*—Gray matter more natural looking.

*Eleventh Dorsal.*—Outline of gray matter quite distinct. There is a marked degeneration of the left postero-median fasciculus.

The cauda equina presents the following alterations: The three last anterior nerve roots leaving the conus medullaris are involved in a gummous growth the size of a bean, into which pass also the posterior roots of the second and third sacral nerves of the left side. They are involved about two inches from the cord. Lower in the canal there are two or three small fibres, which present slight tuberous enlargements.

The tumor of the cord varies in transverse diameter from three-eighths to one-quarter of an inch in diameter; it is completely within the cord, the symmetry of which is not materially altered (Fig. 1). In shape, above and below, it is rounded; in the middle, more ovoid. The vertical extent is not quite half an inch. At a limited region the dura is adherent to the pia, which membrane, at this point, is distinctly thickened. With a low power it is seen that the growth occupies the right antero-lateral region, destroying and pushing aside the anterior cornu, displacing the antero-median fissure and pushing back the posterior
cornu. In the upper part of the growth, the outlines of the gray matter of the left side and of the right posterior horn are well seen. In the middle portion they are much less distinct; and here the growth reaches so far over that it is only one-eighth of an inch from the left lateral margin of the cord. The growth is firm, not encapsulated, and sections in carmine stain of a deep red color. The greater portion of the mass is made up of a dense fibro-caseous tissue, devoid of cell-elements, and through which passes a number of blood-vessels, some of which are obliterated, some free. At the periphery, there is marked cell proliferation, particularly towards the gray matter. This is also very distinct in the anterior median fissure. The anterior spinal artery is involved at the edge of the growth, and the adventitia encircled in three-fourths of its extent. The intima is greatly thickened, and the cell elements look much swollen. In the adherent dura, which is not thickened, there are amyloid bodies. The gray matter looks swollen; at the upper portion of the tumor area, the large cells are distinct, but the nuclei do not stain well in carmine. In the middle and lower portions of the affected

Fig. 1.—Gumma of cervical cord opposite fourth nerve root.
regions, the nerve cells are much less distinct, and there is extensive infiltration with leucocytes, particularly in the neighborhood of the vessels.

In the white matter the axis cylinders everywhere stain in the carmine, but the neuroglia looks swollen, and has very indistinct outlines.

The cervical cord, above the gumma, stains well in both carmine and by Wiegert method. The gray matter is distinct, and the nerve cells look somewhat swollen; their nuclei stain well.

Fig. 2.—Lumbar cord, showing degeneration of the left posterior column.

The tumor of the cauda has matted the nerve roots together, and sections in hæmatoxylin and eosin show large areas of indifferent tissue stained red, surrounded by zones of actively poliferating connective tissue, the cells of which stain deeply in the hæmatoxylin. In the central caseo-fibrous regions the outlines of the nerve bundles can be seen, and, in places, numerous irregular areas, lighter in color, closely set together, which represent the degenerating nerve fibre with their medullary sheaths pale, and many of the axis cylinders stained.

The degeneration of the left posterior column is interesting. In the lumbar cord it involves a wide area, chiefly in the root zone, not reaching the median surface or the posterior, except close to the nerve root (Fig. 2). In the dorsal cord (Fig. 3) the root zone is not involved, and the whole column of Goll is affected except a narrow wedge.
In the region of the tumor the degeneration does not reach so close to the posterior margin (Fig. 1).

Fig. 3.—Dorsal cord. Descending degeneration of left columns of Goll.

The left sciatic is extensively degenerated. In the right there are two or three bundles in which atrophy is apparent. By Weigert's method the contrast is very striking, as shown in Figs. 4 and 5.

Fig. 4.—Left sciatic nerve. Cross section.

The early pains, at first in the arms and legs, then chiefly in the right arm; the wasting, weakness, and gradually total paralysis of the left leg; the slow onset of the paralysis of the right arm with paresis of the left, find their explanation in the progressive growth of the tumor in the cervical cord. The involvement of the anterior sacral roots was responsible in part for the loss of power in the legs,
but the early affection of the left with rapid wasting was undoubtedly the result of the cord lesion.

The accurate localization of the lesions in the cauda equina makes a consideration of the symptoms produced by them of some importance. Unfortunately, there is no note upon sensation in the perineal and gluteal regions, but for two months previous to death there was loss of control of the bladder and rectum. We can, I think, look upon this case as confirming the view that the ano-vesical centres are in the

Fig. 5.—Portion of cross section of right sciatic nerve.

sacral, not in the lumbar segments of the cord. The disturbance in the reflex arc was here chiefly in the efferent branches involved in the third, fourth and fifth cords. It will be remembered that of the afferent branches only the second and third sacral roots were involved.

A third point of interest is the ascending degeneration in the left column of Goll due to the lesion in the second and third posterior sacral roots, and, in part also, undoubtedly, to extensive disease of the left sciatic nerve. As is shown in the figures, the distribution of the sclerosis presented the well-known variations in passing from the lumbar to the cervical cord.

Lastly, the case offers an excellent illustration of the chief symptoms of acute central myelitis, particularly in the high temperature, the arthritic disturbances and the marked trophic changes, as shown in the rapid development of bed sores.
On a Case of Simple Idiopathic Muscular Atrophy, Involving the Face and the Scapulo-Humeral Muscles.

BY

WILLIAM OSLER, M. D.,

Professor of Medicine, Johns Hopkins University, Baltimore.
ON A CASE OF SIMPLE IDIOPATHIC MUSCULAR ATROPHY, INVOLVING THE FACE AND THE SCAPULO-HUMERAL MUSCLES.

BY WILLIAM OSLER, M.D.,
PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

In the classification of primary myopathies, the difficulties have been greatly increased by the description of forms depending upon the situation of the atrophy. Varieties of the same disease have been described as separate maladies, and from the inevitable confusion we have scarcely escaped.

Erb has simplified matters very much by grouping all the forms under one designation—dystrophia muscularis progressiva—of which two chief types are recognized:

(1) With primary hypertrophy, the pseudo-hypertrophic muscular paralysis.

(2) With primary atrophy.

As cases of pseudo-hypertrophic paralysis occur in which atrophy and hypertrophy exist in the same muscle, or wasting occurs in one group and enlargement in another, or atrophy in one group precedes for months the development of hypertrophy in another, it is not surprising that these two forms are regarded by many as identical. Gowers, however, calls attention to the fact that, when cases of atrophy occur in families, they never present the features of pseudo-hypertrophic disease.

It is in the cases with primary muscular atrophy that the greatest confusion exists in classification, and the following forms have been recognized and described:

(1) Erb's juvenile form.
(2) The facio-scapulo-humeral form of Duchenne, and of Landouzy and Déjérine.
(3) The hereditary form of Leyden.
(4) The peroneal type of Charcot, Marie, and Tooth.

Gowers has, it seems to me, followed the sensible plan in disregarding all of these subdivisions, and describing the cases under the designation "simple idiopathic muscular atrophy."\(^1\)

CASE.—Sebastian B., aged fifteen, sent to the University Hospital

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\(^1\) A full discussion of the relation of these forms to each other has recently been published by Dr. B. Sachs. New York Med. Journal, Dec. 15, 1888.
November, 1888. Good family history, both parents living; mother lame, cause unknown. Has one brother, aged twenty, and a second aged thirteen. Has three sisters, aged seventeen, eight, and three, respectively, all well. Two brothers are dead, cause unknown.

Personal history.—He has had measles, smallpox, and possibly scarlet fever. For several years he has had attacks of abdominal pain. He has also had earache. Until five years ago he was well and strong, and played about like other boys. From this time he had gradually been getting weak in the arms, and for between three and four years he has not been able to whistle. All of this time he has been in fair health, but has had increasing difficulty in dressing himself, and in getting from the recumbent to the erect posture.

Present condition.—Station erect, back not curved, gait normal. Face smooth, immobile, and expressionless—the so-called facies myopathique; naso-labial fold absent; lips project, but the prominence is in part owing to the teeth. The eyes are large, no exophthalmos; movement of the eyeballs normal. On attempting to close the eyes the palpebral slit remains open about two mm. in breadth. Most forcible contraction of the orbicular muscles fails completely to cover the eyes. (See Fig. 1.) He is unable to frown or to pucker his eyebrows. The forehead can be wrinkled. He has fair power of movement of lips, and he can pucker them in the movements to whistle, but cannot make the sound. When he laughs he opens the lips vertically, but the angles of the mouth are not drawn out. The zygomatics do not appear to act. The dilators of the nose move slightly on deep inspiration.

Neck. Thyroid is a little enlarged. The clavicular portion of the sterno-cleido muscle is wasted, the upper part is better marked than at the lower. The scaleni seem well developed.

Thorax. Long, and depressed in antero-lateral regions. The pectorals are extremely wasted, scarcely a portion of the muscle can be felt.
The subclavicular regions are much flattened. The scapulae are winged and stand out prominently. Trapezius is wasted in its lower portion. The superior fold on either side is still well marked. The neck does not look so thin from behind. The latissimi dorsi and serrati muscles are much wasted. The interscapular regions are flattened as if the rhomboids were involved. The supra- and infra-spinati are thin, and the scapular fossae show with great distinctness.

The upper extremities are extremely wasted, contrasting strongly with the legs. The movements are considerably impaired. The right arm can be lifted above the head; the left only to the level of the ear. At the most prominent part of the biceps the circumference is only five inches. The bony prominences of the shoulder-joints stand out almost free from muscular covering. The acromion and coracoid processes and the greater and lesser tuberosities can be plainly seen. The deltoids are extremely wasted. When the arm is everted there is a small
portion of the muscle, just above its insertion, which stands out with
great prominence. The biceps, triceps, and brachialis anticus on both
sides are much wasted. In making strong flexion of the arm there is still
a slight belly on the biceps. At the outer margin of the upper part of the
right biceps there is an oval, firm portion. Proportionally more muscle
remains on the triceps. The forearm measures at the middle five and
a quarter inches. The supinators have lost their prominence. The
flexors remain in considerable bulk. There is a fair volume of muscle
in the extensor surface. Pronation and supination are perfect. The hands
are thin; no special wasting of the thenar or hypo-thenar eminences, or of
the interosseus spaces. He cannot make a fist satisfactorily with either
hand. Movements of the fingers are slow but perfect. There are little
warts on the hands, several on the palmar surfaces and terminal
phalanges.

Fig. 2 gives a fair representation of the distribution of the atrophy.

Lower extremities. The glutei do not appear wasted. The thighs at
the middle measure eleven and a half inches. The region of the inter-
\nal vasti seem somewhat wasted. The calves measure nine and a half
inches. No wasting of the leg muscles. Moves the feet and toes per-
fectly.

There are no fibrillary tremors. Sensation everywhere perfect. Knee-
\jerk extremely feeble.

Dr. Willets reported that there was no reaction of degeneration in any
of the wasted muscles.

The patient can still dress himself, but with difficulty. When recum-
bent, he cannot raise himself upright. He gets out of bed by rolling the
feet and legs out first, then turning on his face and sliding out.

Duchenne first described a form of muscular atrophy beginning in
infancy and attacking the muscles of the face. Landouzy and Dé-
\jérine (Revue de Médecine, 1885) have studied this form with great care,
and regard it as different from the other forms of juvenile hereditary
myopathies. In their first communication they described two families,
and reported a post-mortem which showed the spinal cord to be normal.
In a second communication (Revue de Médecine, December, 1886) they
described six cases, and again expressed doubts as to the identity of this
with Erb's juvenile form, and also denied that it has any connection
with pseudo-hypertrophic muscular paralysis. Marie and Guinon
(Revue de Médecine, 1885) describe four cases in two families, in one
instance beginning at the age of thirty. They hold that this form is
not essentially different from the other varieties of the primary myo-
pathies. Remak (Neurologisches Centralblatt, 1884) describes the case
of a man, aged thirty-two, in whom the affection began in childhood;
there were other members of the family also affected. He, too, seems
to regard it as a variety of the juvenile form of progressive muscular
atrophy. Kreske (Neurologisches Centralblatt, 1886) reports the case of
a boy of ten, affected since his fourth year. There were no other mem-
bers of the family affected. Singer (Zeitschrift für Heilkunde, Bd. 8;
Neurologisches Centralblatt, 1887) reports the case of a man, aged thirty-
four, who for two years had difficulty in whistling; the muscles of the shoulder and of the face were also affected. He, also, regards this form as only a variety, not a separate affection. Spillman and Haushalter (Revue de Médecine, 1888), and Sperling (Neurologisches Centralblatt, 1889) also report cases.

Altogether, there are recorded about twenty-five of this variety of idiopathic muscular atrophy. In the great majority of cases, the disease has begun in childhood or in youth. One case of Landouzy and Déjérine began at the fortieth year in the shoulder and arm; four years later it affected the face. This, with the case of Singer's, which began at thirty-two years, and the case of Marie and Guinon, which began at thirty years, shows that the onset of the affection may be delayed until adult life. The cases all seem to conform to the characteristics of simple idiopathic muscular atrophy, and I see no reason why we should classify this variety as a separate disorder.

The cases of this kind, and of Erb's juvenile form, do not appear to be nearly so frequent in this country as the pseudo-hypertrophic variety, which is not at all an uncommon disease. With the exception of the case of James Stewart's report (Canada Lancet, September, 1884) no cases of Erb's juvenile form have been reported, and none, so far as I know, of the so-called Landouzy-Déjérine type.
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NOTE ON INTRA-THORACIC GROWTHS DEVELOPING FROM THE THYROID GLAND.

BY WILLIAM OSLER, M.D.,
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It has been shown that portions of thyroidal tissue may be met with anywhere from the base of the tongue to the heart, and in regions lying between these points the so-called struma tumors may be found, or even in rare instances within the trachea. Thyroidal growths also occur within the thorax, most commonly sub-sternal in position, and connected directly with the gland. Of these a number have been described (Virchow, Geschwülste, Bd. 3). More rarely tumors develop from the deeper portions or aberrant bits of a lateral lobe and extend into the chest, forming large intra-thoracic growths.

A most remarkable case is reported by Dettrich (Prager med. Wochenschrift, No. 31, 1887). In a woman, aged sixty, who had suffered for some time with cough and hæmoptysis there was found, filling the greater part of the right side, a cystic tumor the size of a man's head. It was covered by the parietal pleura and naturally caused great compression of the lung. Above, it was connected with the right lateral
lobe of the thyroid. The cyst had yellowish-brown contents and contained cholesterol. Kretschy (*Wiener med. Wochenschrift*, 1877) describes a sarcoma of the thyroid, four and three-quarters inches in length, which formed an extensive mediastinal tumor passing to the level of the ninth dorsal vertebrae.

In the following case, No. 702, Post-mortem Records, Montreal General Hospital, there was a tumor similar in situation to Dettrich’s, though not so large:

The patient, a woman, had died with symptoms of purulent bronchitis. There was no special emaciation. Occupying the top of the left thoracic cavity, outside the pleura, was a mass the size of a large orange, closely attached to the oesophagus. The arch of the aorta lay on the right side, the left subclavian passed directly over it and the left carotid passed just beside it. There was no special connection with any thoracic organ, though filling completely the top of the left thorax. There was a large bronchocele, the left lobe of which was in contact with the tumor and could not be isolated from it.

On section, it consisted of a series of imperfectly separated cysts containing a yellow-brown fluid in which were plates of cholesterol. The upper part of the tumor was firm and hard; some of the septa had calcified, others had a fibro-cartilaginous consistence.

The relations of this mass, its anatomical character, and the nature of the contents of the cysts, identical with that which is found in so many cases of old
bronchocele, leave no question that it had developed from an outlying lobule of the left thyroid.

In connection with the case of Kretschy, above referred to, a somewhat similar instance was reported by me a few years ago (Montreal General Hospital Reports, Vol. I., 1880):

A girl, aged sixteen, had been under treatment for what appeared to be ordinary bronchocele. It had grown with great rapidity. There was marked difficulty in breathing and the question of tracheotomy was considered, but, as the dyspnœa became easier, the operation was deferred. Death occurred suddenly. Post-mortem, a tumor was found which involved exclusively the left lobe of the thyroid and formed a large round mass eight inches in circumference; above it extended to the level of the thyro-hyoid ligament, while below it passed down beside the trachea to the bifurcation. From behind, the mass had an elongated, somewhat oval shape; the lower end rested upon the left bronchus. Along this surface it measured one and three-quarters inches in length. At the upper right angle of the mass in front was a small thin remnant of the left lobe capping the tumor, the tissues of the two blending, not separated by a capsule. The right lobe of the thyroid was of normal size and appearance. Histologically the growth consisted of small lymphoid corpuscles.

I reported this case as one of lympho-sarcoma of the deep cervical glands involving the thyroid and simulating goitre, but I have no doubt now that it was a case similar to Kretschy's, in which the growth developed from a thyroidal lobe with extensions down the trachea.
ON THE VALUE OF LAVERAN'S ORGANISMS IN THE DIAGNOSIS OF MALARIA.

By Professor William Osler, M. D.

The attitude of the profession on the question of micro-organisms of malaria is one of judicious skepticism. Between the bacillus malarie of Klebs and Tomassi-Crudelli, and the protozoa described by Laveran, the average doctor cannot be expected to decide; but even among workers and teachers, there is by no means unanimity. So far as I know, there has been no confirmation of the observations of the first named authors on a specific bacillus in the disease. It is far otherwise with the organisms described by Laveran, whose work has now been confirmed by competent observers in Italy, America and India. I do not know of a single clinician or pathologist, living in a suitable region, who has really worked at the subject, who has not been convinced of the truth of Laveran's statements. Doubtless many have had my experience. In 1886, at the meeting of the "Association of American Physicians," when Dr. Councilman presented a summary of Laveran's views, I (speaking out of the fulness of my ignorance) was extremely skeptical. When I had the opportunity of giving to the question, the study which its importance demanded, I was soon convinced, and I had the satisfaction of confirming, in almost every particular, the observations which Laveran had made, and discussed the whole subject in a paper, published in the British Medical Journal, March 12, 1887. For the past two years, at the Philadelphia and University Hospitals, I have had abundant opportunities of studying cases of malaria, with an ever-deepening conviction that the organisms of Laveran are peculiar to the disease.

The experience of Dr. Vandyke Carter, Principal of the Grant Medical College, Bombay, one of the most distinguished pathologists in India, appears to have been very similar to my own. He, too, had been rather repelled by the apparently extraordinary statements of Laveran, and had not given careful study to the subject, until the appearance of my paper in the British Medical Journal. His elaborate contribution to the subject, one of the most important which has been made, confirms in almost every detail the statements of the French observer. To the impartial student, this remarkable unanimity in observations made by Laveran in Algiers, by Marchiafava and Celli and Golgi in Italy, by Councilman, James and myself in this country, and by Vandyke Carter in India, should, to say the least, carry conviction as to the importance and constancy of these bodies in malaria. While it may be a little early to ask acceptance of the view that
these organisms constitute the specific germ of the disease, the work already done warrants positively the statement that they are peculiar to and diagnostic of the presence of the malarial poison. It is not surprising that certain observers, who have perhaps seen but few cases, have been inclined to regard the changes in the red corpuscles as degenerative rather than as the manifestations of an intracellular parasite; but the study of the remarkable serial development of the segmenting forms described by Golgi cannot possibly be explained by any other view, than that we are dealing here with an independent organism. The crescentic bodies, too, are so peculiar, so characteristic, so unlike anything which we meet with in the blood in other conditions, that I have usually found it an easy matter to convert the most hardened unbeliever by a demonstration of their presence in a few cases. Still more remarkable are the flagellate organisms.

Putting aside, for the time, until the complete life history of these organisms shall be worked out, the question of their etiological relation to the disease, I would briefly refer to their diagnostic importance. In my former paper, I gave in this connection several interesting illustrations. Since that date, I have, in an increased experience, become even more convinced of the really great value in doubtful cases of these blood examinations. In ordinary intermittent fever, of recent origin, there is hardly ever any question in the diagnosis, and any doubts which may exist, quinine readily clears up. The value of the blood examination lies particularly in the chronic cases and in anomalous forms. Here one has to be constantly on guard and it may be impossible for days to determine definitely the nature of the affection. We have since the opening of the hospital, admitted twenty-four cases of malaria to the wards, of which, in seven instances, the diagnosis was definitely determined by blood examination, and could have been determined in no other manner. So important do we consider it, that we now, as a matter of routine, examine the blood of all cases of fever, and indeed all cases of low temperature, which seem so peculiar in certain forms of chronic malarial poison. We had a salutary lesson in the early part of the summer, in the case of an old man, aged 81, admitted July 25th, with a temperature of 104°. He had on the 9th, a heat stroke, while picking berries, was better the next day and kept about until his admission. There were signs of bronchitis at the bases of the lungs, and in the right inter-scapular region, the note was higher pitched and the breathing tubular. The temperature rose to 105°, and throughout the 26th, 27th and 28th, kept between 101° and 103°; on the 28th, between the hours of 6 and 12 a. m., the temperature was subnormal, but he had no chills. He was extremely feeble, not cachectic or sallow; the pulse was very irregular. Neither I nor Dr. Atkinson, who saw the case for me during an absence of three days, had any other idea than that the case was one of low pneumonia in an elderly man. The patient died on the 8th day of his admission, and to my surprise and chagrin the post-mortem examination of the blood and spleen showed the case to have been one of malarial fever. Had a thorough blood examination been made and full doses of quinine administered, the man's life might have been saved. In five or six cases of irregular fever, the presence of the organisms in the blood has determined the nature of the disease.
The routine examination is really not tedious, and we have adopted it now in the dispensary, as well as in the wards. Unfortunately for the general practitioner, the determination of the intra-cellular forms requires a tolerably high power with good illumination. We use the one-twelfth immersion, but with care a good eighth is sufficient, and in the chronic cases, with the crescents in the blood, a sixth suffices. It is important to have the finger tip, from which the blood is drawn, thoroughly cleansed, and it is best to take a very small drop of blood, so as to have the layer uniformly and thinly spread out with the corpuscles isolated not in rouleaux.

Briefly to summarize for the information of those who may not have access to monographs on the subject, the following are the important facts relating to these organisms:

First; In the acute forms of malaria there exists, within certain of the red corpuscles, amoeboid bodies, usually pigmented, which undergo a definite evolution, increasing in size, gradually filling the entire corpuscles, and which prior to and during the chill, undergo a remarkable segmentation. There are also, in some cases, free pigmented bodies. To the form within the corpuscles, which undergoes changes, the term *plasmodium* has been applied. Occasionally in acute forms, flagellate bodies are seen free in the blood, presenting from three to eight long, actively moving cilia. According to Councilman, these are much more common in blood withdrawn from the spleen.

Second; In more chronic cases, particularly in the forms of remittent fever, which are so apt to be taken for typhoid, the corpuscles do not so often present the intercellular forms, but there are remarkable ovoid, rounded and crescentic bodies deeply pigmented. These are, in all probability, related to and developed from intercellular forms. From certain of these, particularly the ovoid and rounded forms, the flagellate bodies may be seen to develop. Dr. Ghriskey has recently been studying the evolution of these forms in the Clinical Laboratory, and has been able to demonstrate on many occasions the development of the flagellate bodies from ovoid-rounded forms.

I hope, in an early number of the forthcoming Hospital Reports, to review fully the present status of the malaria question and to report our experience, particularly in the anomalous forms of fever in which the blood examination is so important. It is particularly to be desired that those who have ample opportunities for the study, shall approach the problem with unbiased minds. It requires a little patience in order to become thoroughly familiar with the various phases of development of the organism. Additional workers are needed. We have yet to determine fully the relation of the forms to each other and the complete life history of the parasite in the body; and, what is much more important, to ascertain its existence outside and to learn the conditions of its development and the way in which it gains access to the body.

A ready method of separating malarial from other forms of fever will prove a great boon to southern physicians. Dr. Carter's paper contains many illustrations of the value of Laveran's observations in this respect, and workers in sub-tropical and tropical regions cannot longer afford to neglect so valuable an aid in diagnosis.
ON THE FORM OF CONVULSIVE TIC ASSOCIATED WITH CORPROLALIA, ETC.

Clinical remarks made to the Post-graduate Class in Medicine, Johns Hopkins Hospital, Baltimore, October 11, 1890.

BY WILLIAM OSLER, M.D.,
Professor of the Principles and Practice of Medicine, Johns Hopkins University.

GENTLEMEN: There is a curious disease—or perhaps, more correctly, symptom-group—met with chiefly in children, to which attention has been called of late by French writers, which is characterized by irregular, spasmodic movements, the utterance of involuntary explosive sounds or words, and mental defects of various sorts. It is not a very common affection in this country, and I take this opportunity to bring to your notice a case which we have been studying for the past few weeks.

The cases have usually been described as chorea, or "habit-spasm," both of which conditions are simulated very closely by the irregular movements; certain instances also have been reported as hysteria.

Unfortunately Charcot and his pupils, Guinon and Gilles de la Tourette, have given to this affection the name maladie des tics convulsifs. I say unfortunately, for here and in England we use the term convulsive tic to characterize a totally different affection, involving usually the facial muscles and of either central or peripheral origin, but not necessarily coming on in childhood and not characterized by the other features presented by the disease of which we are at present speaking; and thus it happens that if we turn to the
recent editions of French books we find under *tic convulsif* a disease very different from that described by the same name in English and American works.

The history of our patient is briefly as follows:

Mary — , aged thirteen years, applied at the out-patient department, July 10th, and was under observation there until September 16th, when she was admitted to ward G. Her mother brought her to the hospital on account of irregular involuntary movements and curious barking-sounds.

Her family history is good. Her mother is a bright, intelligent woman, a German by birth, and has had ten children, none of whom have been affected as is this girl—the third child. There is no tendency to mental disease in the family. The birth of the child was normal and there is no history of convulsions in infancy. She has had scarlet fever, but has not had rheumatism.

Since her fifth year she has been subject to involuntary jerking movements of the arms and head, which vary very much in intensity, sometimes better, sometimes worse, and they have usually been called by the doctors chorea. They have not interfered with her development or her education. She has not yet menstruated. For the past year she has been making curious sounds; beginning by saying “hah” very frequently. Sometimes she would bark like a dog. She would also call out the names of people, and if she heard a new name she would be apt to repeat it.

Her condition on admission was as follows: A bright, intelligent child; well educated, writes nicely, takes an interest in her books and has evidently been ambitious at school. She is nervous, the right arm occasionally twitches and the head jerks. There are no grimaces, but on several occasions she seemed to mimic movements of the face. Every now and then she calls out “hah,” “Bridget,” or “stools,” or says in sharp, clear tones, “bow, wow.” There are no disturbances of sen-
sation, and the special senses are unimpaired. Examination of the heart and lungs was negative; the thyroid gland is slightly enlarged.

Throughout the latter part of July and August attempts were made to treat the case by hypnotic suggestions, at first with success, but subsequently without any improvement.

On September 8th her mother wrote the following letter, which illustrated a new phase of the child's malady:

"Mary makes use of words lately that make me ashamed to bring her to you or to take her out of the house; it is dreadful; such words as ——, ——, ——, etc. She was always a modest child, and it almost kills me for to hear her use such words."

Her mother was asked to bring her again and was told that this was really a part of the affection, and, like the movements, involuntary in character. The child seemed more depressed, had lost flesh and, her mother said, had changed mentally. She was very obstinate, and almost invariably did what she was told not to do, and had threatened to take poison. She will say the bad words aloud or mutter them to herself.

On admission to the hospital she was placed in a room by herself, kept in bed, and encouraged in every way to cease making the sounds and to stop the use of the bad words. During the first two weeks she improved very much. The movements were reduced in frequency and sometimes during my visit they would not be noticed at all. They most commonly affected the right arm, which, with the hand, was drawn up in a sudden electric-like jerk. The head and neck would jerk simultaneously or alone. Sometimes there was combined movement of the neck and chest-muscles. The involuntary expressions of which she made use were those mentioned above; a sharp bark was the most frequent sound,
which, from its ringing quality, could be heard at a considerable distance.

She was so much better that she was allowed to get up and another patient was placed in the room with her. This seemed to excite and worry her, and shortly afterward the barking sounds became much more frequent, occurring every one or two minutes, and she complained of great soreness of the muscles of the chest and abdomen. The movements, however, did not increase. She was again placed in seclusion and in bed, and again improvement followed, but she still barks and she has not given up entirely the use of bad words.

She is a docile, intelligent child, and seems anxious to get well. She has kept a diary, which displays no special peculiarity. She writes verses, which are not worse than those usually composed by girls of her age.

The patient, as you see, is a bright, intelligent child, and there are still to be seen occasional lateral jerkings of the head, and now and then the right arm is elevated with great quickness. You have also heard the peculiar sharp sound which she makes from time to time, which sometimes resembles a hiccup. More commonly it has a barking quality, which is not nearly so marked as it was some weeks ago, when usually two of the sounds succeeded each other with rapidity. In addition, this child has presented several of the symptoms which Charcot and his pupils regard as characteristic of the affection.

I have just spoken of the emission of involuntary sounds and words. The use of bad words, for which the ingenious expression coprolalia (faecal speech) has been invented, is present in very many of the cases, forming a feature very distressing to the relatives.

You can judge from the letter of this child’s mother how grievously troubled she was over our patient’s “slips of the tongue.” She cried bitterly when she told us of it, and said that she wished her daughter
would die. In some of the reported cases, even children of five or six years have persistently used words of the most obscene character.

A second peculiarity of a similar nature is the repetition of any sound or word heard, for which the name *echolalia* is employed by Charcot. It is a veritable echo, and the word is repeated by the patient so soon as heard. In our case this did not often occur, but, on hearing a new name, she would be apt in a short time to repeat it very often; thus, on first coming into the hospital, she used for some time the word "nurse," which she was constantly hearing.

The facial mimicry was noticed on several occasions, but has not been a special feature. This curious imitation of muscular movement has been described, not only in the face muscles, but in those of the extremities, and simulates closely those of the remarkable Malay disease known as *latah*. The term *echokinesia* has been applied to this mimicry of movements.

So far, our patient has not presented any symptom of mental disorder, unless indeed her extreme obstinacy and her addiction to poetry could be so considered. Upon this aspect of the affection Charcot lays great stress, and thinks that sooner or later the cases invariably show psychical changes. By far the most common mental change is the existence of fixed ideas, and Guinon, whose article in the *Dictionnaire Encyclopédique* is the most extensive on the subject, describes these as very often a fear of impending trouble, or a fear of places (*agoraphobia*). In other instances there is "*folie pourquoi,*" in which the patient incessantly demands the reason for the performance of even the simplest actions of life.

"*Folie du doute*" and the curious, irresistible impulse to touch certain objects, may also be present. Another form of this obsession which has been noted in some instances, is what has been termed *arithmomania*, in which the patient is possessed with an irresistible desire
to do some special mathematical problem, or to count up to a certain number before doing a certain action.

In brief, the main peculiarities of the disease are: the involuntary movements, the uttering of words or cries, coprolalia, mimicry of words or movements, and, in very many instances, mental symptoms, chiefly some form of obsession. The majority of the cases present only the first two or three of these features, and it is not until the more advanced stages that the mental symptoms become marked.

The prognosis, according to Charcot and his pupils, is extremely grave, and very few cases recover, but years may elapse before the onset of mental symptoms. The diagnosis is easily made in cases such as the one before you; but there are several conditions which in certain features simulate the disease very closely. Thus coprolalia and the irresistible tendency, on all occasions, even the most solemn, to use obscene words have been described apart from any motor phenomena. There is the oft-quoted case of the Marquis of Dampierre, who, from early youth to his ninetieth year, involuntarily uttered, even under circumstances the most solemn, the words "merde!" and "foutu cochon!"

Still more common is the existence, particularly in children and youth, of a fixed idea. One of the commonest is the "dilirie de toucher," which impels the individual to touch certain objects, and of which the great Dr. Johnson, as is well known, was a subject. One of the most graphic accounts, probably autobiographical, of this imperative impulse to touch objects is given by George Borrow in his Lavengro, the Scholar, the Gypsy, and Priest, in which the practice was followed in order to prevent evil happening to the lad's mother.

In many points the affection has a close resemblance to the common habit-chorea or habit-spasm, with which indeed the involuntary movement of convulsive tic is identical. I do not remember, however, to have seen at
the Philadelphia Infirmary for Nervous Diseases, among
the numerous cases of habit-spasm which came to our
clinics, particularly to the clinic of Dr. S. Weir Mitchell,
a single instance in which other symptoms developed.

I had one case with facial spasm, in which the lad put
his middle finger into his mouth and bit it severely, and
at the same time with the index-finger compressed the
tip of his nose. This habit had continued for a long
time, and had resulted in the production of a thick
callosity on both surfaces of the second phalanx of his
finger. A somewhat similar trick is reported to have
been practised by Hartley Coleridge when a boy, only,
if I recollect aright, he was in the habit of biting his
arm. And quite recently there was at the clinic a girl
nine years old, who, during convalescence from chorea,
developed the curious trick of first smelling and then
blowing upon anything she took into her hand.

With hysteria the relations of the disease are not
thought to be very close by Charcot and his pupils.
The affection usually sets in at a period of life earlier
than that at which hysterical symptoms begin, and very
many of the cases show no manifestations of hysteria.
The utterance of loud involuntary cries and anomalous
sounds is, however, a special feature of certain cases of
hysteria which may thus present a resemblance to this
form of convulsive tic. They, however, are not neces-
sarily associated with involuntary movements, and are
usually of a more bizarre character. I remember a
remarkable case of the kind which was brought into
Professor Wagner's clinic at Leipsic. A child, aged
about fourteen years, had for several weeks uttered the
most remarkable inspiratory cry, followed by a deep-
toned expiration, both of which were audible at a great
distance. They persisted during the day with each
respiration, but ceased during sleep. The child was
worn to a skeleton.

Dr. Gapen, of Omaha, brought to the hospital last
year a phonographic cylinder, on which was recorded a most remarkable hysterical cry which the patient, a young girl, had been in the habit of uttering for many months, and which was loud enough to be heard at a distance of several blocks. These cases, however, usually present other features which make the diagnosis clear.

As was the case in this patient, the affection begins at an early period, in the majority of the cases, according to Guinon, from the sixth to the twelfth year. They are commonly regarded as chorea.

An hereditary neuropathic taint has been present in many instances.

We have treated this child in the hospital by seclusion and rest in bed, and have made moral rather than physical efforts to improve her condition. She is certainly better, particularly in the matter of the use of bad words.
A Case of Sensory Aphasia—Word-blindness with Hemianopsia.

BY

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FROM

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,
MARCH, 1891.
A CASE OF SENSORY APHASIA—WORD-BLINDNESS WITH HEMIANOPSIA.

BY WILLIAM OSLER, M.D.,
PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

This case illustrates the following points: (1) The association of word-blindness with disease in the parieto-temporal region; (2) The paraphasia which so often accompanies this condition; (3) The occurrence of hemianopsia from interruption of the fibres of the optic radiation, without disease of the occipital lobe.

Clinical Summary.—Inability to read a newspaper the first symptom; typical word-blindness, retention of intelligent hearing; misplacing of words and sentences—paraphasia; right homonymous hemianopsia; no paralysis; persistence of this condition for over two months, with gradual loss of muscular strength and mental power. For thirty-six hours before death, paralysis of right arm and leg.

Anatomical Summary.—Necrotic softening in the left hemisphere of the supra-marginal and lower part of angular gyri, of the posterior part of the first and second temporal, and of the two annexant convolutions uniting the first temporal to the parietal lobe. Complete transverse softening of the white matter between these convolutions externally and the lateral ventricle. The gray and white matter of the occipital lobe unchanged.

John W., aged seventy-two years, Scotchman, bookkeeper, applied at the Philadelphia Infirmary for Diseases of the Nervous System, November 14, 1888, complaining of uneasy sensations in his head. He was a healthy, vigorous-looking man, perfectly intelligent, and spoke well and clearly. It was not thought at first that there was anything the matter with him, beyond slight headache; but it was noticed that he had occasional difficulty in getting the word he wished, and this circumstance led to a more careful examination. He says he has been a temperate man, and has always enjoyed excellent health. He has not had syphilis. For some time past he has not felt as well as usual. On November 1st, while at his supper, in a restaurant, he found that he could not read the daily paper. He was sure that this came on quickly, and had been his chief annoyance, as he was an ardent politician. He had no definite headache, but
complained of a diffuse, uneasy sensation, and sometimes placed his hand upon his head saying, "It is all wrong here."

**Present condition:*** Vigorous-looking man for his age; face intelligent; speaks clearly and rapidly, with occasional interruptions; no paralysis; movements of the arms, legs, and face perfect; no loss of sensation on either side; no incoordination; he stands well with his eyes shut; reflexes normal.

**Speech:** Though he speaks clearly and intelligently, and utters some sentences without interruption, replying promptly and fluently to questions, and evidently understanding everything, there is very distinct speech-disturbance; thus, for some time he could not give the address of his residence. He says he knows where it is, but could not pronounce it. He told the first name of the man with whom he lived, but could not say the second. He could not name his own occupation, but said, "Keep, keep, keep. Oh, you say it for me." When told—bookkeeper—he repeated it distinctly. He occasionally misplaces words. In referring to a wetting which he had spoken of, he said, "Deliberate attacks of wet dress."

When a printed or written page is presented to him he does not appear to comprehend the words. The word Philadelphia at the head of a hospital blank, he read P, r, i, n, g, r, e, k. When told that it was Philadelphia, he replied, "Oh, certainly it is, I've known it for sixty-five years." His age, 72, written on a slip of paper, he read 213. He did not recognize the words "Cleveland and Harrison" at the top of a newspaper column, but when read to him, said, "I know all about them," and began making some very shrewd observations. He can write his name, but says that since his failure to see he does so with difficulty. He writes as well with his eyes shut as when they are open, but does so with hesitation. He wrote the name of the hospital, and the words "Philadelphia Record." He could not read the words of his name after he had written them. He names objects held before him quite readily.

Dr. de Schweinitz examined the eyes, and reported the presence of right lateral homonymous hemianopsia. Dr. de Schweinitz's report is here annexed:

**Right eye:** An oval optic disk, with the scleral ring plainly followed all round, and both superficial and deep layers very gray; the veins full and dark, the arteries unchanged in size; a fine retinal haze veiled the upper and lower margins of the disk; there were no splotches or hemorrhages in the general eye-ground, and no changes in the macular region.

**Left eye:** An oval optic disk, with well-marked scleral ring, more visible than on the opposite side, because the retinal haze seen in the opposite eye was less apparent. A similar appearance of the retinal circulation and an absence of gross changes in the retina and choroid; the disk was also gray, but not so devoid of color and capillarity as that upon the opposite side.

**November 21, 1888.** Patient was admitted to hospital with no essential change in his condition, though he did not seem to misplace words so often. He could not say his age, 72, but said "60 and 10 above that and 2 above that—that's 72." He knew the day of the week and of the month, and what year it was. He was asked how many years after Burns's death he was born, and said 5000, but at once corrected himself and said "No, no; I do not mean that—twenty-five." The state
of word-blindness persisted. He was given a newspaper, the Philadelphia Record, and asked to read its title. He said "Christian Observer." It was difficult to get him to write, and it was impossible for him to do so from dictation for any lengthy sentence. He wrote the word "Record" when told to, but after he had written it he spelled it "Freedom."

The oval outline of each figure is the average normal field of vision; the shading represents the blind areas. The asterisk is the fixing-point which is not exactly bisected by the line of division, but this passes a little to the right, although touching the fixing-point. There is decided contraction of the left half of each field, most marked upon the right side; that is, upon the side opposite to the lesion. The fields were taken with a one-centimetre square of white, pasted upon a dead black surface.

For the first two weeks in hospital there was no special change. He seemed to speak with rather fewer errors. He kept very quiet, and did not care to talk with the other patients. When asked how he felt, he generally placed his hand upon his head and repeated several times the phrase "All wrong here."

December 6. For several days he has vomited frequently.

8th. The following note was made: "Talks less freely. Speaks intelligently and plainly at first, but after a few minutes it is difficult to understand what he states. No additional ocular changes. The grip in the hands is equal. He walks with a somewhat tottering gait, though there is no actual paralysis."

For the next three weeks the condition remained practically unchanged. Early in January he became distinctly weaker.

On the 4th the following note was made: "Patient has been in bed for several days; no paralysis of motion or of sensation. He seems to understand and usually answers correctly, though, as was frequently noted, he would not give his age correctly, saying any figures. When first spoken to, his speech is clear and distinct, and then in a few minutes becomes very incoherent and mumbling. Lately he has been very noisy and restless at night, getting out of bed and walking about the ward."

On the 12th the note was: "Remains in the same condition; no fever; no paralysis; talks without difficulty; answers some questions correctly, others in a senseless manner. Says continually 'Lord, have mercy.' No disturbance of sensation."

On the 15th the note was: "Has been very wakeful for the past two days. This morning could not be roused. He lies with his head turned to the left, but sometimes moves it to the right. No conjugate deviation of the eyes. Pupils equal and of medium size; react feebly to light. Muscles of the right side of face seem to act as well as those on the left.
There is complete paralysis of the right arm, which has come on within the last twenty-four hours. He moves the right leg, but when lifted it falls more rapidly and with more dead weight than the other. He is in a semi-comatose condition. There are loud bronchial râles.” He sank and died on the afternoon of the 16th.

Post-mortem, five hours after death: Body moderately well-nourished; no rigor mortis; calvaria thick and symmetrical.

Dura was normal and very closely adherent to the skull; sinuses contained recent blood-clots; a moderate amount of fluid escaped on removal of the brain. At the base the membranes were normal. The carotids were stiff and atheromatus; vertebral and basilar arteries in the same state. Nerves at the base normal.

Cortex: Pia moderately injected; the posterior part of the left hemisphere looked fuller and the convolutions were paler than on the right side. This was particularly marked on the parietal and temporal lobes, portions of which look softened. More accurately determined by sight and touch, the superficial soft areas were as follows:

1. The entire supra-marginal and the lower part of the angular gyri.
2. The posterior part of the first and second temporal gyri, which bulge distinctly, and the veins of which are much distended.
3. The two annectant convolutions joining the first temporal gyrus and the parietal convolutions, only evident after separation of the fissure of Sylvius.

Though these parts were softened and contrasted by touch, in a marked manner, with the rest of the brain, superficially they did not look very different, and were only a little paler in color.

The cortical arteries were stiff, and when slit open were found free to the finer ramifications. They presented occasional flakes of atheroma and recent soft blood-clots, but no thrombi. The posterior cerebri presented several atheromatous patches. The branches passing to the cuneus were free. The lateral ventricle was not distended on the left side. The caudate nuclei and thalami looked normal. On the outer wall of the left ventricle, just at the point of divergence of the descending and posterior cornua, there was a grayish-white swelling, presenting congested bloodvessels here and there, and which looked like a region of thrombotic necrosis; behind, it extended into the posterior horn, anteriorly it did not reach the pulvinar. The ependyma of the posterior horn was soft, but the deeper white matter of the lingual gyrus and of the convolution at the junction of the parieto-occipital and calcarine fissures was not involved to any depth.

The organ was injected with and hardened in Müller’s fluid, and then horizontal sections were made.

Section 1, half an inch above the corpus callosum.
The white matter of the centrum ovale on the left side presented a slight reddish-brown color in the fibres of the parietal lobe.

Section 2, at level of the corpus callosum.
An area of softening in the posterior-external part of the centrum ovale of about four centimetres in antero-posterior extent. Externally, this section passed through the angular gyrus, the gray matter of which was firm, but the white matter was uniformly softened.

Section 3, at the level of the middle of the basal ganglia.
The softening occupied a large area between the posterior horn and
the middle of the outer aspect of the hemisphere, involving the entire white matter of this region (see figure). Anteriorly it reached to the posterior part of the internal capsule, which appeared somewhat softened but not changed in color. Posteriorly, the softening did not extend behind a line drawn across the level of the parieto-occipital fissure. The white matter of the occipital lobe was firm, and the gray matter of the cuneus was uninvolved.

Section 4, passing through the outer third of the left crus.

**Fig. 2.**

Transverse section of left hemisphere passing through supra-marginal convolution, showing the area of softening. F. S., fissure of Sylvius; L. N., lenticular nucleus; C. N., caudate nucleus; C. N., tail of caudate nucleus: Int. Cap., internal capsule; T. H., optic thalamus; P. O., parieto-occipital fissure; E. P. O., an external parieto-occipital fissure (?); Sup. Marg., supra-marginal gyrus.

The softening is more extensive. It reached nearly seven centimetres in the antero-posterior direction, extending anteriorly, and just involving the fibres behind the end of the lenticular nucleus and the tail of the caudate nucleus, where it passed into the descending cornu. Posteriorly, the white fibres of the occipital lobe were not involved. Internally, the softening reached to the ependyma of the posterior horn, which was dark in color. Externally, it touched, but did not involve the gray matter of the convolutions.

The internal capsule, the lenticular nucleus, the thalamus, and the crus seemed normal.

Section 5, at the level of the upper margin of the uncinate convolution.

Large area of softening, two inches in thickness and one in breadth, in the temporo-sphenoidal lobe, reaching to within two inches of its apex. Externally, it touched the gray matter of the third and the base of the second temporal gyri.

The corresponding sections of the other hemisphere were normal. The softened area has a grayish-yellow appearance, interspersed with patches of extravasation. It appeared to be ordinary necrotic change. The vessels were carefully withdrawn; no miliary aneurisms were found, but many of the smaller ones were blocked with thrombi. At the lower part of the temporo-sphenoidal lobe the margin of softened area was unusually firm. The branches of the posterior cerebral artery were free.

The drawing was made from a section which passed through the lower portion of the supra-marginal gyrus, at half an inch from the termina-
tion of the Sylvian fissure. The softening here was more superficial than at any other point, and seemed to involve the gray matter. In the posterior part of the first and second temporal the softening reached to the gray matter, but did not enter it. In the section from which the drawing was taken a deep fissure is seen, which crossed the hemisphere, and seemed to separate the parietal and occipital lobes. The angular gyrus lies at a higher level than shown in the section; the white matter of it was softened, but the gray looked very natural. The drawing is an exact representation of the specimen, made by placing tracing-paper upon the section.
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Rudolf Virchow:

THE MAN AND THE STUDENT.

BY

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1891.
By his commission the physician is sent to the sick, and knowing in his calling neither Jew nor Gentile, bond or free, perhaps he alone rises superior to those differences which separate and make us dwell apart, too often oblivious to the common hopes and common frailties which should bind us together as a race. In his professional relations, though divided by national lines, there remains the feeling that he belongs to a Guild which owes no local allegiance, which has neither king nor country, but whose work is in the world. The Æsculapian temple has given place to the hospital, and the priestly character of the physician has vanished with the ages; still there is left with us a strong feeling of brotherhood, a sense of unity, which the limitations of language, race, and country have not been able to efface. So it has seemed meet and right to gather here this evening to do honor to a man—not of this country, not of our blood—whose life has been spent in the highest interests of humanity, whose special work has revolutionized the science of medicine, whose genius has shed lustre upon our craft.

The century now drawing to a close has seen the realization of much that the wise of old longed for, much of which the earnest spirits of the past had dreamt. It has been a century of release—a time of the loosening of bands and bonds; and medicine, too, after a long enslavement, ecclesiastical and philosophical, received its emancipation. Forsaking the

1 Remarks made at the Virchow celebration, Johns Hopkins University, Baltimore, October 13, 1891.
traditions of the elders, and scouting the Shibboleth of 
schools and sects, she has at last put off the garments 
of her pride, and with the reed of humility in her 
hand sits at the feet of her mistress, the new science. 
Not to any one man can this revolution be ascribed: 
the Zeitgeist was potent, and like a leaven worked even 
in unwilling minds; but no physician of our time has 
done more to promote the change, or by his individual 
efforts to win his generation to accept it, than Rudolf 
Virchow.

And now, as the shadows lengthen, and ere the twi-
light deepens, it has seemed right to his many pupils 
and friends, the world over, to show their love by a 
gathering in his honor, on this his seventieth birthday. 
To-day, in Berlin, a Fest has been held, in which sev-
eral hundred members of the profession in this and 
other countries have been participants, as subscribers 
to the fund which was organized for the occasion. It 
seemed well, also, to his pupils who are teachers in this 
university, and to others, that the event should be 
marked by a reunion at which we could tell over the 
story of his life, rejoice in his career, and express the 
gratitude which we on this side of the Atlantic feel to 
the great German physician.

Let me first lay before you a brief outline of his life:
Rudolf Virchow was born October 13, 1821, at Schi-
velbein, a small town in Pomerania. Details of his 
family and of his childhood, which would be so inter-
esting to us, are not available. Educated at the Gym-
nasium in Berlin, he left it at Easter, 1839, to begin 
his medical studies, and graduated from the University 
of that City in 1843. The following year he became 
assistant in pathological anatomy to Froriep; and in 
1846 he was made prosector, and in 1847 a lecturer at 
the university. In 1849, on account of his active 
participation in the political events of the previous
year he was dismissed from his university positions, and, as he mentions was only mit grossen beschränkungen reinstated, largely in fact by the efforts of the profession of Berlin, and particularly of the medical societies. In August, 1849, he received a call to the chair of pathological anatomy at Würzburg, a position which he held until 1856, when, by the unanimous vote of the faculty, he was recommended for, and received the appointment which he still holds, namely, professor of pathological anatomy at Berlin. Prior to leaving Berlin he founded, in 1847, his celebrated Archiv, which now in its one hundred and twenty-eighth volume, is the greatest storehouse of facts in scientific medicine possessed by us to-day.

Externally, at least, an uneventful, quiet, peaceable life with few changes.

As an illustration of the successful pursuit of various callings, Virchow's career is without parallel in our profession, and this many-sidedness adds greatly to the interest of his life. Dr. Welch will speak of his special labors in the science of pathology; and other aspects will be considered by Dr. Chew and Dr. Friedenwald. I propose to indicate briefly a few traits in his life as a man of science and as a citizen.

From the days of the great Stageirite, who, if he never practised medicine, was at least an asclepiad and an anatomist, the intimate relation of medicine with science, has in no way been better shown than in the long array of physicians who have become distinguished in biological studies. Until the gradual differentiation of subjects, necessitated by the rapid growth of knowledge, the physician, as a matter of course, was a naturalist; and in the present era, from Galen to Huxley, the brightest minds of the profession in all countries, have turned towards science as a recreation or as a pursuit. Alas! that in the present
generation, with its strong bent toward specialism, this combination seems more and more impossible. We miss now the quickening spirit and the wiser insight that come with work in a wide field; and in the great cities of this country we look in vain among practising physicians for the successors of Jacob Bigelow of Boston, Holmes of Montreal, Barton of Philadelphia, and others—men who maintained in this matter an honorable tradition, whose names live in natural history societies and academies of natural science, in the founding of which they were mainly instrumental.

In anthropology and archaeology the name of Rudolf Virchow is almost as well known as it is in medicine. Very early in his work we find evidences of this bent in the memorable studies, now forty years ago, on Cretins and on the development of the skull. Not a year has passed since that time without some notable contribution from him on these subjects; and those of us who know only his professional side may well marvel at the industry of the man whose name is quoted and appears in anthropological memoirs and journals as often as in our technical works. In recognition of his remarkable labors in this department, a special anthropological institute was organized in 1881, on the occasion of the twenty-fifth year of his professoriate. In 1884, on returning to Berlin for the first time since my student days, I took with me four choice examples of skulls of British Columbian Indians, knowing well how acceptable they would be. In his room at the Pathological Institute, surrounded by crania and skeletons, and directing his celebrated diener, who was mending Trojan pottery, I found the professor noting the peculiarities of a set of bones which he had just received from Madeira. Not the warm thanks, nor the cheerful, friendly greeting which he always had
for an old student, pleased me half so much as the prompt and decisive identification of the skulls which I had brought, and his rapid sketch of the cranial characters of the North American Indian. The profound expert, not the dilettante student, has characterized all of his work in this line. Even an enumeration with a brief report of his published writings in anthropological and archæological subjects would take more time than has been allotted to me. Of his relations with Schliemann I must say something, which I could not do so well as in the words used by his friend, Dr. Jacobi, ten years ago: "Schliemann, by whose modern witchcraft holy old Troy is just leaving its tomb, invited Virchow to aid him in his work of discovery of the buried city. He went—partly to aid, partly, as he says, to escape from overwhelming labors at home—only to be engrossed in just as hard work, though of a different nature. In regard to the latter, Schliemann's recent book on 'Ilios' contains some very interesting material. But what has engaged my attention and interest most has been to observe the humanity and indefatigability displayed by the great man in the service of the poor and sick. To read of his constant, practical exertions in behalf of the miserable population of Hissarlik; how he taught the aborigines the efficacy of chamomile and juniper, which grow about them, unnoticed and unused, in rare abundance; how a spring he laid open for archæological purposes has been called by them 'the physician's' and is believed to have beneficial effects; how he was, on leaving the neighborhood, loaded with flowers, the only thing they had and knew would please him, has charmed me intensely. To admire a great man for his professional labors, eagerly undertaken and successfully carried out, is a great satisfaction to the scientific observer; to be able to love him, in addi-
tion, for his philanthropy and warm-heartedness, is a feast of the soul."

Virchow's life-work has been the study of the processes of disease, and in the profession we revere him as the greatest master that has appeared among us since John Hunter. There is another aspect of his work which has been memorable for good to his native city. From the day when, as a young man of twenty-seven, he was sent by the Prussian government to Upper Silesia to study the typhus epidemic, then raging among the half-starved population, he has been one of the most powerful advocates in Germany for sanitary reform; and it is not too much to say that it is largely to his efforts that the city of Berlin owes its magnificent system of drainage. His work in this department has been simply monumental, and characterized by the thoroughness which marks the specialist.

To his exhaustive monographs on camp-diseases, cholera, military medicine, and other cognate subjects, I cannot even refer.

It will be generally acknowledged that in this country doctors are, as a rule, bad citizens, taking little or no interest in civic, state or national politics. Let me detain you a moment or two longer to tell of one of us, at least, who, in the midst of absorbing pursuits, has found time to serve his city and his country. For more than twenty years Virchow has sat in the Berlin City Council as an alderman, and to no feature in his extraordinary life does the Berliner point with more justifiable pride. It is a combination of qualities only too rare, when the learned professor can leave his laboratory and take his share in practical, municipal work. How much his colleagues have appreciated his efforts has been shown by his election as Vice-president of the Board; and on the occasion of the celebration in 1881, the Rathhaus was not only
placed at the disposal of the committee, but the expenses of the decorations, etc., were met by the council; and today comes word by cable that he has been presented with the freedom of the city.

The years succeeding to Virchow's student days were full of strong political feeling, and with the French Revolution, in 1848, came a general awakening. In Germany the struggle for representative government attracted many of the ardent spirits of our profession, and it was then that Virchow began his political career. The revolution was a failure, and brought nothing to the young prosector but dismissal from his public positions. His participation might have been condoned had he not issued a medico-political journal, Die Medicinische Reform, the numbers of which are even now very interesting reading, and contain ideas which to-day would be called liberal, but were then revolutionary. It is a striking evidence of the deep impression which even at that time Virchow had made upon his colleagues and the profession, that he was reinstated in his office at the urgent solicitation of the medical societies of the city. He relates in his "Gedächtnissrede auf Schönlein," who was the Court physician and not at all in harmony with the views of his prosector, that on one occasion in 1848, at a post-mortem, in which the diagnosis of haemorrhage into the brain had been made by the professor, Virchow demonstrated an obstructing embolus in the artery. Schönlein turned to him in a half-vexed, half-joking manner and said, "Sie sehen auch ueberall Barrikan- den." His active political life dates from 1862, when he was elected to the lower house from one of the Berlin districts, and has, I believe, sat as member almost continuously from that date. The conditions in Germany have not been favorable to a man of advanced liberal views, and Virchow has been attached
to a party which has not been conspicuously successful; but he has been an honest and industrious worker, a supporter of all measures for the relief of the people, a strenuous opponent of all class and repressive legislation, and above all an implacable enemy of absolutism as personified in Bismarck. A man of such strong individuality would make his presence felt in any assembly; and he always commanded the attention of his colleagues, and oftentimes his speeches have been reported fully both in England and in America.

As an illustration of his capacity for varied work, I recall one day in 1884, in which he gave the morning demonstration and lecture at the Pathological Institute, addressed the Town Council at great length on the extension of the canalization scheme, and made a Budget speech in the House, both of which were reported at great length in the papers of the next day.

Naturally, amid such diverse occupations, it has been impossible for him to enter with his old vigor into the minutiae of pathological anatomy, and his attitude of late years has been critical rather than productive; but his interest in all that pertains to our profession is unabated, and is a feature of his character to which I must allude. Too often with us, in our gatherings and society meetings, the "men of rathe and riper years" are conspicuous by their absence. In this respect our great master has set a notable example. Amid cares and worries, social and political, with a thousand and one ties and duties, he has never held aloof from his brethren; but as the weekly medical journals testify, no man in Berlin has been more active, and for years he has held the Presidency of the Berliner Medicinische Gessellschaft, one of the most important medical societies of Europe.

Surely the contemplation of a life so noble in its aims, so notable in its achievements, so varied in
its pursuits, may well fill us with admiration for the man and with pride that he is a member of our profession. The influence of his work has been deep and far-reaching, and in one way or another has been felt by each one of us. It is well to acknowledge the debt which we every-day practitioners owe to the great leaders and workers in the scientific branches of our art. We dwell too much in corners, and, consumed with the petty cares of a bread-and-butter struggle, forget that outside our routine lie Elysian fields into which we may never have wandered, the tillage of which is not done by our hands, but the fruits of which we of the profession (and you of the public) fully and freely enjoy. The lesson which should sink deepest into our hearts is the answer which a life, such as Virchow’s, gives to those who to-day, as in past generations, see only pills and potions in the profession of medicine, and who, utilizing the gains of science, fail to appreciate the dignity and the worth of the methods by which they are attained. As Pausanias pestered Empedocles, even to the end, for the details of the cure of Pantheia, so there are with us still those who, “asking not wisdom, but drugs to charm with,” are impatient at the slow progress of science, forgetting that the chaos from which order is now appearing has been in great part dispelled by the work of one still living — by the man whom to-night we delight to honor.
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THE HEALING OF TUBERCULOSIS.¹

By William Osler, M.D., F.R.C.P., Lond.,
Professor of Medicine Johns Hopkins University, Baltimore.

That pulmonary tuberculosis is a curable affection is demonstrated clinically by the recovery of patients in whose sputa elastic tissue and bacilli have been found, and anatomically by the existence of lesions in all stages of repair. The healing follows ordinary pathological laws; the granulation-products and associated pneumonia become converted into a durable scar-tissue, and the caseous areas become impregnated with lime salts. To these conditions alone the term healing should be applied. Much more commonly the fibrous substitution does not involve the entire tuberculous mass, or the cheesy nodules are simply encapsulated, and the tubercle may then be termed involuted or quiescent, but is not destroyed. When cavities of any size have formed, perfect healing in the true sense of the term does not, I believe, occur. I have never seen a specimen which would indicate that a vomica had cicatrized. Owing to the shrinkage of the connective tissue, a cavity may be greatly limited; or, indeed, an entire series of cavities may be so reduced by the gradual sclerosis that an upper lobe, in which this most frequently happens, may be only one-third its normal size and consist of a mass of indurated tissue containing cavities which communicate with dilated bronchi. These are the cicatrices fistuleuses of Laennec.

Although of late much study has been given to the subject, our knowledge is not more complete than that of Laennec's, whose article on "The Curability of Phthisis"² is an admirable presentation of the question even from our present standpoint. He recognized the frequency with which, in post-mortem examination —

¹ Read before the Medico-Chirurgical Faculty of Maryland, session of 1891.
tions, evidence of old tubercular lesions occurred, and his wide clinical experience had taught him that recovery took place in many cases. He recognized the cicatrices complètes and the cicatrices fistuleuses, and suggested that as tubercle growing in the glands, "which we call scrofula," often healed, why should it not do the same in the lungs?

Recent studies have shown that in a considerable proportion of the bodies of persons dying of all diseases, quiescent or healed tubercular lesions are found in the lungs; a proportion so high, indeed, in the case of some observers, as almost to justify the old German axiom, "Jedermann hat am Ende ein bischen Tuberculose."

My attention was called to the point in 1870 by Palmer Howard, of Montreal, who was in the habit of pointing out the great frequency of puckering at the apices of the lungs in elderly persons. Subsequently, when I became pathologist to the Montreal General Hospital, we frequently discussed the significance of these changes, whether indicative or not of healed phthisis. We see at the apices the following conditions, all of which have been held by some to signify healed tubercular processes:

1. Thickening of the pleura, usually the posterior surface of the apex, with perhaps subjacent induration of the lung tissue for a distance of a few millimetres. This I do not think indicates more than a local chronic pleurisy, and, as my colleague, Dr. Welch, suggests, is possibly analogous to, and has no greater significance than, a milky patch on the pericardium.

2. A puckered cicatrix at the apex depressing the pleura, which here may or may not be thickened. On section, there is a fibrous scar much pigmented, the bronchioles in the neighborhood are dilated, but there are neither tubercles nor cheesy masses. Such structures are extremely common, and may in some, but I doubt if in all, cases indicate a healed tubercular lesion.

3. Puckered cicatrices with a cheesy or cretaceous central nodule and with scattered tubercles—"colonies," Laennec called them—in the vicinity. Identical with these in their true nature, though differing in the general appearance, are the solitary or cheesy calcareous nodules found throughout the lungs. The
tubercular nature of the structures in this division cannot be doubted.

4. The cicatrices fistuleuses of Laennec, consisting of one or more quiescent cavities surrounded by fibroid tissue and communicating with bronchi.

I have carefully reviewed the records of 1000 post-mortems, dictated in all instances by myself, with reference to this question. In 216 cases death was caused by pulmonary tuberculosis. Excluding the simple fibroid puckering, the local thickening of the pleura, and the solitary caseous or calcareous mass, there were among the remaining 784 cases, 59, or 5.05 per cent., in which persons dying of other diseases presented undoubted tuberculous lesions in the lungs. This proportion will appear small in comparison with the figures which I shall give presently, but it must be remembered that I have excluded the simple fibroid puckering and the solitary cheesy nodule, unless in the latter case it was distinctly mentioned that there were colonies of tubercles in its vicinity. Of the 59 cases, the chief causes of death were: cancer of various organs, 12; cirrhosis of the liver, 7; accidents and operations, 8; acute fevers, 9; uræmia, 5; diseases of the heart and arteries, 5; other affections, 13. The ages of the cases were as follows: under ten years, 4; from ten to twenty, 2; from twenty to thirty, 8; from thirty to forty, 10; from forty to fifty, 14; from fifty to sixty, 14; from sixty to seventy, 5; above seventy, 2.

The observations upon this subject have been of late numerous, and the discrepancies in the figures are due largely to an absence of a uniform criterion as to what should be regarded as obsolete or quiescent tubercles. If the fibroid patches are to be included, as in some of the following statistics, the percentage is high. Heitler analyzed the Vienna post-mortem records and found that in 16,562 cases, in which the death was not directly caused by phthisis, there were 780 instances of obsolete tubercle, a percentage of 4.7. He excluded, as I have done, the simple fibroid induration at the apex. With each decennial period, up to the sixtieth year, the number of cases increased.

In 27 per cent., in 400 bodies, Bollinger found evidence of healing of tubercular lesions in the lungs. Staudacher, in 787
cases, found apex cirrhosis in 202. Massini found evidences of healing in 39 per cent. in 228 bodies examined. Harris, of Manchester, has examined 200 bodies, keeping this object specially in view. Excluding the deaths from phthisis and persons under twenty, there were left 139 cases for analysis, in 54 of which there were relics of former active tuberculosis, 38.84 per cent. The greater number of these were in the third, fourth, and fifth decades. The large proportion here given is accounted for by the inclusion of the fibroid cicatrices as well as the caseous masses.

I heard the statement made in Paris that, of the bodies examined in the morgue, the majority of which are of suicides or persons accidentally killed, nearly seventy-five per cent. present evidences of old tuberculous lesions.

These facts demonstrate, first, the wide-spread prevalence of tuberculosis; and secondly, the fact, as shown by my figures, that at least one-fourth of all infected persons recover spontaneously. In the great majority of these cases the disease is very limited and has made no progress, and in many instances could not have given physical signs. But even in more advanced disease, where the local indications are marked and bacilli and elastic tissue present in the sputum, arrest is by no means infrequent, and although post-mortem evidence shows that we are wrong in speaking of the process as cured, yet the condition is consistent with comparatively good health.

We may say, then, that in one-fourth of all persons infected the disease is never manifest, but remains local, and the lesions gradually heal. In another fourth of those attacked, local signs develop, but the physiological resistance is sufficient to arrest the process, or in modern language the battle is against the invaders, the day is with the tissues, and a permanent time is agreed upon, or sometimes a permanent withdrawal of the enemy. The remaining fifty per cent. of those infected fight, for months and years, losing battles until the final defeat comes.

The nature of the tissue soil is the important factor in tuberculosis; the seed is so widely scattered, that upon each one of us, sooner or later, some grains must fall. I am in the habit of illustrating this point to my students by the parable of the sower
who went out to sow his seed. In the large majority of persons
the bacilli, which are inhaled or ingested, find the conditions un-
favorable to their growth—"Some fell by the way-side;" in a
second group the bacilli find lodgment and grow, but they do not
thrive, as the soil conditions are not suitable, there is, in the lan-
guage of the parable, "no depth of earth"—"Some fell upon stony
ground;" and in a third group the tissue soil is favorable, the
bacilli grow luxuriantly, producing the various local manifestations
of tuberculosis—"Other fell on good ground."

Once infection has occurred, the chief indication is to place the
person in surroundings favorable to the maintenance of the maxi-
mum degree of nutrition. The influence of environment has
never been better illustrated than by Trudeau's experiment. In-
oculated rabbits, confined in a damp dark place, rapidly succumbed,
whilst others allowed to roam at large either recovered or had
slight lesions. It is the same in human tuberculosis; a patient
confined to the house, living in close, overheated rooms, or in a
stuffy, ill-ventilated dwelling of the poor, or treated in a hospital
ward, is in a position analogous to the rabbit confined in the
cellar, whereas a patient living in fresh air and sunshine for the
greater part of the day has a chance comparable to that of the
rabbit running wild. The very essence of the climatic treatment
of tuberculosis is improved nutrition by change of environment.
Fresh air and sunshine are the essentials with which, in com-
parison, altitude is of secondary importance.
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THE COLD-BATH TREATMENT OF TYPHOID FEVER.¹

By William Osler, M. D.,
Professor of Medicine in the Johns Hopkins University.

Gentlemen: While no one can bring a railing accusation against us as a profession for neglecting the things that pertain to the cure of disease by drugs, we must bear meekly the rebuke of those who claim that non-medicinal agents, such as systematic exercise, fresh air, and the use of water scarcely receive the attention which their virtues demand. Particularly is this the case with water as a means of controlling the severer symptoms of fever. For centuries it was one of the great hygienic measures, and the use of baths in disease is recommended by writers in every age since Hippocrates. You will find, indeed, in the writings of the Father of Medicine an admirable account of the indications and uses of the bath, to some of which I shall refer again.

During the first half of this century hydrotherapy was largely in the hands of the hydropaths, by which term may be distinguished the large class of hermaphrodite practitioners who look upon water as a cure-all; but under the guidance of von Ziemssen, Liebermeister, Winternitz, Brand, and others, the use of compresses, douches, and the various forms of baths has been introduced largely into rational practice. More than thirty years ago Brand, of Stettin, urged the systematic treatment of typhoid fever by cold baths. The method has been successfully carried out on a

¹A Clinical Lecture delivered to the Graduate Class of the Johns Hopkins Hospital, Baltimore, November 9, 1892.
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large scale in Germany and in France, but in England and in this country only spasmodic and not very successful efforts have been made to encourage its use, even in hospital practice. The remarkable figures published by Brand in 1887 made me determine to adopt it at the earliest possible date; but when the wards of the Johns Hopkins Hospital were first opened the arrangements were not adapted, and our staff of nurses not large enough, to carry out the method thoroughly, so that for the first year we followed the ordinary symptomatic and expectant plan of treatment. I am not myself personally responsible for its introduction. During my absence in Europe, in 1890, my former first assistant, Dr. Lafleur, now of Montreal, after a visit to the wards of Dr. J. C. Wilson at the German Hospital in Philadelphia, began the practice, and the hospital is under a lasting debt to him for the accuracy and care with which at the outset, and for more than a year subsequently, he supervised the details of the treatment.

Most of you have seen the application of the method in the wards, but I shall emphasize certain points in the procedure by having one of the patients bathed before you, so that you may see the minutiae.

The ward orders, subject of course to modifications, are as follows: The temperature of typhoid-fever patients is to be taken every two hours; when above 102.5°, a bath at 70° is to be given every third hour. The patient before you has reached the sixteenth day of the disease. He has been in hospital nine days, and has had thirty-six baths. The tub is wheeled to the side of the bed—a practice much preferable to that followed in some of the foreign hospitals of carrying the patient to the bath, or indeed allowing him, if he is able, to walk to it.

The technique of the procedure is as follows: The tub, as you see, is of light papier-maché material, and even when filled with water, as at present, is readily portable on wheels. The temperature of the water is 68°. Here in the amphitheatre we shall reverse the usual procedure and have the patient wheeled to the side of the bath. The preparation is extremely simple. The heavier bedclothes are removed and a light sheet is thrown over the patient from the neck down. Under this his night-shirt is removed, and, if necessary, a light napkin is applied over the genitals. The patient is given a small quantity of whiskey. Two orderlies will
now lift him into the bath, still covered with the sheet. This patient happens to be a large, well-nourished man, and he fits very comfortably into the bath tub, having, as you notice, an air-cushion supporting the head and neck. You will see in the ante-room one or two other forms of bath tubs, one of which has a sloping platform for the support of the back. In more delicate, particularly in thin, emaciated patients, the greatest care must be taken to support the nates and make the posture in the bath as comfortable as possible. A cloth wrung out of ice-water is placed upon the patient's head, and with a small sponge the head and face are kept bathed with the same water. You see here an unusually docile patient, who takes the baths without much protest, but, as you have just heard him say, he would prefer them warm. Systematic friction is now applied to the skin either with the hand or by means of a cloth or India-rubber, which for convenience may be attached to a stick. The friction is rightly regarded as a very important element in the treatment, though, as you hear from this patient, he does not at all like it, and prefers to be left alone. Curiously enough, Hippocrates laid stress upon this very point when he said: "But the person who takes the bath should be orderly and reserved in his manner, should do nothing for himself, but others should pour the water upon him and rub him." The abdomen should not be rubbed. While the patient is in the bath, the bed is prepared for his reception with a rubber sheet, a blanket, and over these an old linen sheet. (After remaining in the bath for twenty minutes the patient was lifted out.)

I am glad that you have witnessed the little *contretemps* in lifting this patient out of his bath. You see that he is a strongly built, heavy man, and the orderlies were only just able to lift him from the bath to the bed, and you saw that in doing so there was some little difficulty, owing to the catching of one arm on the side of the bath. This, however, does not very often happen, but now and then patients complain of scratches in the process of lifting in and out of the bath; and though done, as you see, with the greatest possible care, these little accidents are liable to happen. The man is now well wrapped up in the sheet, which is tuckt in between the arms and legs, and brought well around the neck. Over this the blanket is placed. In cases in which the temperature is very high the patient may remain in the sheet for from five
to ten minutes, but under other circumstances he may be carefully dried at once. You see that this man retains a good color in his face; the extremities are cold but not livid; and he is now beginning to shiver. Very often this shivering is distressing while in the bath, and one of the most unpleasant features of the system. If the patient is very cold and the shivering is extreme, hot bottles may be applied to the feet and at the sides. You see by this two-hourly temperature-chart the influence of the baths; and half an hour after this the temperature will be taken again, and the record made. If at the end of three hours the temperature is again above 102.5°, he will have another bath such as you have just seen. Now, before the patient is wheeled out, he will be given two ounces of hot milk with a little whiskey.

Practically what you have seen in this case is the routine of our treatment. The patients receive no medicine other than alcohol, and that we do not give as a matter of course, but as a rule only, before and after the bath. In other cases, when the heart becomes feeble, we give strychnine, and in some cases digitalis and ether. The effects of the baths are: first, to reduce the fever, principally by favoring heat-dissipation and by the direct action of the cold water upon the blood that circulates in the superficial vessels; secondly, as a general tonic to the nervous and circulatory systems. Perhaps the most striking effect is seen in the lessening of the nervous irritability, the favoring of sleep, and the clearing of the mind. In patients treated early by this method we rarely see the dry tongue, muttering delirium, the subsultus, and the other grave nervous phenomena which are of such serious import in typhoid fever. The baths, too, appear to improve the general nutrition, and the patients take their food better, digest better, and, as has been said, the vital processes all seem more active. Do not suppose, however, that you can, as Brand enthusiastically says, keep the patient in an almost afebrile condition. An inspection of any series of carefully-taken charts will convince you that this is an impossibility; the temperature rises again in a variable space of time, and in some instances the influence of the bath upon the rectal temperature is extremely slight.

An important question is, shall we bathe all cases indifferently, whether the temperature reaches 102.5° or not, and whether grave or mild? When the temperature does not reach the point indi-
cated, if the patient's condition is good and there are no nervous symptoms, the baths are not ordered. This has been our practice during the past two years, and I do not know that we have in any case had cause to regret it. Of course, we do not here often see patients before the seventh day, but occasionally, as in the man in bed 3 in ward F, we do find cases in which the temperature is very low on admission, scarcely 100° or 101°, while subsequently the fever becomes very pronounced. Now, in the very case in question, the man has subsequently had a sharp attack of typhoid fever, but we did not bathe him when his temperature was low for the very good reason that we did not think he had the disease. On the other hand, in doubtful cases in which the fever is 103°, we have no hesitation in ordering baths, and have frequently bathed patients who subsequently proved to have pneumonia or malaria.

The contra-indications are as follows: Hemorrhage from the bowels; not because the cold baths tend to increase the hemorrhage, but because they interfere with the essential element in treatment, namely, rest. You have seen within the past week in the patients in beds 20 and 24 that the baths were omitted on account of hemorrhage. In the extreme debility of the last stage, in a protracted case, with a feeble pulse, it is advisable to omit the baths, though we do so with reluctance; but in many cases it has seemed wise, particularly in cases admitted in the third week, or admitted in relapse. Often in a day or two the condition improves sufficiently to justify their use. Neither pneumonia nor bronchitis is regarded as a special contra-indication, and pleurisy, only when the pain is severe. Of course, the baths must be omitted when there are signs of perforation.

We use the bath-treatment and advocate it because by it the mortality in typhoid fever has been reduced so remarkably in hospital work that its employment seems imperative for the saving of lives. You can for yourselves read and compare the statistics in the different hospitals which are given in two special works on this method now available for practitioners in this country—one, The Hydriatic Treatment in Typhoid Fever, by Dr. Sihler, of Cleveland, formerly a Fellow of the Johns Hopkins University; the other on the Use of Water in Modern Medicine, by Dr. Simon Baruch, of New York. These little books should be widely read by the profession. They are timely contributions to a subject that has not
yet reached the daily lives of the doctors in this country. Practically, the mortality under the cold-bath treatment in hospitals has been reduced from 15 and 20 or 25 per cent., to an average of 6 or 7 per cent., taking all cases, or even very much lower if the cases are seen early. Indeed, Brand has figures that show an absence of mortality in some 1,200 cases in which the treatment began before the fifth day. But in hospital practice we can never expect to see our patients before the end of the first week. At the German Hospital in Philadelphia, where the method has been followed most accurately by Dr. J. C. Wilson and his colleagues, there were ninety-four consecutive cases treated without a death; but I understand from Dr. Wilson that this remarkable good fortune has not continued, though the mortality has been kept at a very low rate. Our own more limited experience is also strikingly in favor of the method, and a report is in course of publication dealing with the first hundred cases so treated. In the first year of the opening of the hospital there were thirty-two cases treated on the symptomatic and expectant plan, of which eight died, a mortality of 25 per cent., a rate unusually high even for a general hospital. The cases, however, were of unusual severity; one had acute hemorrhagic nephritis, with profuse hematuria; one case, admitted at the beginning of the third week, had extensive double pneumonia. Two cases died of perforation, while another case died of profuse hemorrhage from the bowels. On the other hand, in the first hundred cases treated by the cold baths, the mortality has been only 7 per cent., a reduction so striking and remarkable that it must be attributed to the good results of the bath. Even this rate of mortality, which is about the average for hospitals in which the rigid Brand system is carried out, would be considered by the proposer of the method far too high. In the report referred to I have given full details of the fatal cases, and it will be noticed that one of the seven, an old man of seventy, was admitted late in the disease with extensive lobar pneumonia, and as the disease was not recognized as typhoid he was not bathed. Two cases were admitted in relapse.

You will be pleased to learn that in the cases treated this year we are still gratified with the results of the method. We are at about the seventieth case in our second series of a hundred cases, and only six of these have died.
Lastly, of special interest to you as practitioners, comes the question, how far is this method available in private practice? I have been rapped over the knuckles, so to speak, for saying that in private practice it was scarcely feasible, but I suppose it is more correct to say that in this, as in other matters, where there is a will there is a way, and if the practitioner insists and has the courage of his convictions, the method can in many cases be carried out at home. It is very interesting at this point to know Dr. Sihler’s experience in private practice, and I would recommend the careful perusal, by practitioners, of Appendix A of his little manual. Really the chief obstacle to-day is that of which Hippocrates complains, when, in speaking of the bath, he says “Sometimes it must be less used than it would be otherwise, from the want of accommodation; for in few families are all the conveniences prepared, and persons who can manage the baths as they ought to.” Portable tubs, however, are now available, and with a good nurse, intelligently assisted by one or two members of the patient’s family, the practice can be successfully carried out. There is now, moreover, a much stronger feeling in the profession in favor of hydrotherapy, and the practitioner can at least get the moral support of his colleagues. Still there are difficulties, which can, however, be overcome with care, patience, and a little tact. My preceptor, Dr. R. P. Howard, in Montreal, used to tell a story which rather set the younger ones among us against the Brand method. Early in the “sixties,” shortly after the publication of Brand’s paper, Dr. Howard, in his lectures on typhoid fever, had given the full details, and had spoken of the remarkable results obtained by Brand. One of his pupils, a year or so later, practising in a small town in Western Canada, had faith enough in his teacher and in Brand, to use the cold bath in a very severe case of typhoid fever, which occurred in one of the prominent families of the town. The poor patient promptly died after the bath, and the young physician felt so chagrined, and the feeling against him was so strong, that he left the town. Such an accident, however, is a very remote contingency, and one that need scarcely be taken into account in discussing the advantages and disadvantages of the cold-bath treatment in typhoid fever.

Do not, however, underestimate the troubles that you will encounter in introducing this method into family practice. I have
here a letter from one of my old University Hospital house-physicians, an extremely careful and able practitioner, who has been using the cold bath very faithfully, and in speaking of one case he says: "The prayers, entreaties, supplications, and last but not least effective, the lusty yells of this girl at each bath were such as not to materially increase the repose of the neighborhood or strengthen to any great extent the morale of the family."

We have been congratulating ourselves during the past two or three months that our numerous cases have been doing so satisfactorily, but yesterday one of the inevitable accidents occurred which, in general hospitals must continue, in spite of Brand's statements, to occur occasionally and maintain some mortality, at any rate, in typhoid fever. The patient, admitted about the seventh day of his illness, was a strong, well-built, healthy man, aged thirty-seven. He was bathed from the time of his entry, and had had about forty baths. The day before yesterday the pulse was feeble and rapid after the bath, and it was thought advisable to order the baths to be discontinued. There was a little tenderness in the abdomen, but nothing very striking. Yesterday, as some of you saw, the signs of perforation were well marked, and of this he died. I show you here the small intestine, and you will see a somewhat unusual and remarkable picture. There is a small slough near the ileo-cecal valve, and there are two or three small ulcers in the first half above the valve. There are also one or two swollen solitary follicles, but there are also several patches which show simply the shaven-beard appearance, and the lymph-elements are not themselves specially swollen. At a distance of 30 cm. from the valve there is a small perforation, resulting from the extension of a small, deep slough through both muscular coats. Higher up there are one or two small ulcers, not larger than peas, and above this there are Peyer's patches uninvolved, with scarcely any infiltration. The spleen is very much enlarged and soft. Here was a patient, without extremely high temperature, bathed from about the seventh day, with every favorable indication, and as the autopsy showed, extremely slight ulceration in the ileum, and yet, owing no doubt to local conditions in the limited area involved, the necrosis had extended deeply, and passing through both muscular coats, the inevitable perforation occurred, with fatal peritonitis.