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*From Dr. Jacobi*

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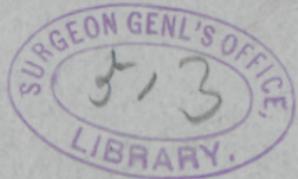
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BY

A. JACOBI, M.D.

NEW YORK

*Reprinted from the* MEDICAL RECORD, *May 19, 1894*



NEW YORK

TROW DIRECTORY, PRINTING AND BOOKBINDING CO.

201-213 EAST TWELFTH STREET

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*presented by author*



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## NON NOCERE.<sup>1</sup>

I UNDERSTOOD that the audience in the General Sessions, consisting of all classes both of medical men and the cultured lay public, was to be entertained with the discussion of subjects, if possible, intelligible to all. Happily, of these there are a great many; for, indeed, the most humane of all the arts is, at the same time, the most human. It is mainly, however, the great specialists in our science that always find topics which, because of their intimate connections with moral, political, and social questions, are interesting to every man and woman of education and culture.

I, Mr. President, am perhaps not so fortunately situated; though I am interested in all of them, I cannot boast of great discoveries in chemistry, bacteriology, or such branches of medical science as are pre-eminently, and sometimes too exclusively, called exact by their adepts and experts. My home has not so much been in laboratories, as on the teacher's platform, and in the sick chamber, the hospital, and the councils of my profession. My life-work has been directed by something like the dictum of Paracelsus, that "true art is not so much revealed by knowing as by acting." Thus I have the honor of addressing you from the stand-point of the practitioner, firmly believing that in medicine, as represented in this Congress, every special research contributed to the general stock of knowledge does not become humanitarian, sacred, ay, medical, before it can be made sub-

<sup>1</sup> Address delivered before the Eleventh International Congress at Rome, Italy, in its General Session of April 4, 1894.

servient either to the prevention or the cure of disease. That principle was uppermost in the minds of the framers of these international medical congresses. From that point of view they ordained that special researches should be communicated in their sections, and that all the latter should be held organically together, like the branches of a tree, or the organs of a system, by the binding power of general meetings. If it were not for that, international special societies would fitly take the place of international medical congresses, and we should have twenty-one sciences in place of the one undivided and indivisible medicine.

It is for that reason that our main anxiety must be, under the heading of "*Non nocere*," that "*nil detrimenti republica capiat*." The congresses must remain what they were intended to be, an assembly for scientific, though also for social, purposes, of delegates of great institutions and corporations, of the leaders in general medicine and in its specialties, and of medical men all over the globe whose interests are devoted to science, in their capacity either as teachers and contributors, or as faithful practitioners. All of you, however, who are leaders in the profession and its councils, may you never forget that, as soon as the scientific concerns cease to prevail over the social, as soon as thousands flock together for the enjoyment of entertainments, excursions, and festivities only, or principally, just as soon will the soul escape out of this body medical, and its constituents will be severed. I trust that in all meetings wisdom and moderation will combine to the end contemplated by the founders of our congresses. Do not forget that these congresses are among the intellectual powers of the earth, and that we are responsible to the world for maintaining them in their integrity. From time to time we shall then have the elevating spectacle of thousands of medical men from all parts of the world, and speaking a dozen different languages, convene at the same call and for the same purpose, moved by the same instincts and interests, the great

and the lowly, the old and the young, brethren on the same moral and scientific platform, if not of equality, still of fraternity and solidarity.

Still, I set out to speak from the stand-point of the practitioner. The critical physician of the last decade or two has seen wondrous changes. His numbers may have increased somewhat, absolutely, but they have decreased, relatively. In large cities the thorough, all-around, general practitioner is becoming scarce. Now and then he is expected to be but the city directory, or the agent for the specialists in brain and nerves, in kidneys and appurtenances, in uterus and appendages, in skin and corns, in heart and lungs, in stomach, throat, nose, eyes, ears, and what not. It will be very difficult to stem the current, for, indeed, the evolution of specialties, both in science and practice, is spontaneous and legitimate. But the waters left their bed long ago. The tendency of the time is mercenary, the medical man is still a man and but human, and many a one is very, very young, and expects to make a great reputation and an easy living out of very little mental capital, and out of a little manual dexterity, to the neglect of general medicine. "Ein Theilchen hat er in der Hand, fehlt leider nur das geistige Band." He forgets, or never knew, that the great specialistic work is performed by men possessing extensive general knowledge and previous practical training. He does not know or feel that with limiting his knowledge, and running after riches and reputation, he has already encroached upon his morals, and lowered the dignity of himself and of the profession. A young medical man who runs off into a specialty, honestly believing that a human organ can be studied and treated separately, like the wheel of a watch, has not intellect enough to be a physician, and ought to have been discouraged from entering the ranks. He who undertakes it from mercenary motives ought to be frowned down, and told that his tendencies and faculties belong to the places where they sell their wares and souls for lucre, and call it business, not a sacred vocation.

You know it is but too true that, while science has taken wings and basked in the brilliant sunshine of rapidly increasing knowledge, the status and the tone of the profession have reason to despond over its restraining clogs. You, who are teachers and leaders in medicine, cannot alter the universal signature of the century; but what you can do is by your teaching to prove the absolute and indestructible dependence upon each other of each organ and the organism, and the logical impossibility of intelligently and scientifically treating a special organ without a closer acquaintance with the body than is obtainable by a four-years' study of medicine and a three-months' special instruction by a teacher who is no better than his pupil. Many a young man sins because he knows no better, and was not told. If the teachers of medicine, if the great professors of specialties in the schools of learning, neglect the duty of teaching from their platforms the morals as well as the science and art of medicine, it is they from whom comes the harm. Moreover, the medical practitioners, by favoring, as they in their modesty are apt to do, in every possible case, the specialist, and the very existence of the specialists in large numbers and beyond need, have tempted the public into thinking less of medicine and medical men, and more of mere handicraft. That is why the physician has gradually lost his dignified position in large communities. It is in the country, where he still is, in his own person, the sole representative both of his science and his calling, that he is still esteemed at his full value.

This, however, is not the only way in which the medical men of every country have injured themselves and their calling. As they have overloaded their ship with the maintenance of uncalled-for numbers of self-made specialists, so they have submitted to the invasion of their lines by the manufacturer of drugs and artificial foods. If the countries be overrun with proprietary and quack medicines and foods, it is to a great extent the fault of the doctors, even those highest in rank. They

will accept and praise, and certify to, the merchandises of the venders—I am afraid some of you carry them in your own pockets this moment—open and strengthen the market for them, and thus educate their public into attending and drugging themselves. If there is to be a pharmaceutical gospel, it ought to be for all of us the national Pharmacopœias.

Still another harm comes to the profession from its own members. Through anxiety to do good, and through prematurely jumping at conclusions from a newly discovered fact, we are liable to promise too much, and inadvertently run after fads. *Quod cupimus et credimus libenter.* We promise to extinguish tuberculosis and to cure cholera. The phantasm disappears, and what remains is sneer and ridicule. We pretend to exterminate senility, and those who have to dig graves laugh at us for our pains.

The origin and source of all such harmful mistakes lie in the conscious or unconscious tendency to help and to heal, and in the fact that the practical perfectibility of all medical sciences depends on the good they can do. The greediness with which the modern products of organic chemistry are sought for in the markets of the world by anxious physicians, the great many errors committed in administering injurious doses which—I will only refer to the modern antipyretics with their after effects, debility, collapse, lividity, cyanosis, depression, subnormal temperature, urticaria, salivation, hyperidrosis, etc.—find their explanation in the numberless cases of aches and woes requiring mitigation. But they also lead to the reproach, which is as old as medical practice, that the doctor is killing his patient, not only as Dryden says of the apothecaries in behalf of the warring doctors of London:

“ From random files a recipe they take  
And many deaths with *one* prescription make,”

but with the large number of his medicines and mediæval theriacs.

We all agree not only that over-dosing is wrong and harmful, but also that it is being practised. To give mercury to salivation; salines until the rest of soluble albumin and salts is gone; digitalis until heart and pulse are below danger line; belladonna until the throat is as hard as a gridiron; quinine until you get deaf; iron until gastric catarrh and constipation destroy what is left of health; to burn noses for everything in the line of ailment that may befall the flesh; to cut the cervix uteri for sterility and endometritis; to sew up the cervix uteri for sterility and endometritis; to cauterize and otherwise handle the problematic ulcerations of the uterus for sterility and endometritis; to introduce glycerol tampons for sterility and endometritis; are abominations to the minds of well-meaning physicians. Still they are being done, and will continue to be done until knowledge increases, judgment improves, the mercenary spirit disappears from our ranks, and perhaps the public refuses to submit.

*Non nocentis.*

But if over-dosing and over-operating be wrong, and sometimes criminal, is it less wrong to under-dose and under-operate? Indeed that is done, I am sorry to say, to at least as dangerous degree. If you were to stand by a child's bedside strangled by a diphtheritic laryngitis, without resorting to intubation or tracheotomy, would you be made less culpable by relying on some theory of your own?

It is not enough to avoid legal responsibility, the civil law is mostly on your side—our law-book is the history of our art and the dictates of our heart. Both say that the so-called expectant treatment has done, and is daily doing, more harm than over-dosing. Our sins are those of omission as well as of commission. A whooping-cough leading to broncho-pneumonia, pulmonary hemorrhage, or convulsion in the fifth or sixth week, while it might have been mitigated or checked before, is an arraignment of the doctor. The self-limited eruptive fevers, measles, scarlatina, typhoid, each of them liable to lead to myo-

cardial changes, heart failure, and death, or to mental disturbance, which were not actively treated in time by absolute rest, reduction of heat, and moderate or vigorous early stimulation; the pneumonia which, when delirium, cyanosis, and dilatation of the right heart became urgent dangers, was not relieved by a venesection; the protracted and hesitating convalescence, with its anæmia and flagging pulse, which was not supported by heart tonics, not "pro re nata," for res was "nata" already, before it was too late forever, are, and must be for life, loads on the practitioner's conscience. Sophocles says (Aias 581):

οὐ πρὸς ἰατροῦ σοφοῦ  
 δρῆνεῖν ἐπωδὰς πρὸς τομῶντι πῆματι.

"No bright physician mourns plaintively over a case where he ought at once to use the knife." Decision must not be difficult, in spite of Hippocrates (ἡ κρίσις χαλεπή), for ὁ καιρὸς οἷός, the favorable time is fleeting. Nor hover over official "maximum doses" in cases where one of the scales contains your anxiety for your own personal safety and lawful righteousness, and the life of a human being is held in the other. Indeed the maximum doses of the Pharmacopœias often appear to be established for the still less than average person who fears more for himself than for his patient.

Parallel to over- and under-dosing, run over- and under-feeding. The latter requires no discussion here, the former I shall refer to only in connection with small infants, for the subject could not be exhausted in ten lectures. They require much food because they have not only to reproduce but to grow. When they take beyond need, one of two things must occur; for no surplus can pass the alimentary tract any length of time without evil results. Either a surplus material is gradually accumulated in the organs and will lead to disease, or no complete digestion takes place, and then all forms of gastritis, enteritis, or auto-infection will develop. I shall only dwell

upon two articles which have taken an improper hold on the imagination of medical men, and have almost been raised into subjects of superstitious veneration. The use of milk-sugar in place of cane-sugar in children's food, to any extent beyond what there is in cow's milk, or its exclusive employment, is a source of acid gastric catarrh which afterward requires medicinal correction; it is transformed into lactic acid beyond need, and proves a detriment to the full conviction of all those who will give the subject proper attention. Thoughtful experience is as valuable an objective addition to our knowledge as a mere chemical or physiological theory.

Next in order is sterilized cow's milk, on which hundreds of thousands of babies are now being fed to the exclusion of everything else. Nobody would teach nowadays the feeding on unchanged or unmixed cow's milk to babies as a proper course to take—as a substitute for mother's milk. But sterilized milk has been looked up to as an object of faith, and treated as a pope among foods, infallible. To feed babies exclusively on sterilized milk has become the rage since it was recommended by gentlemen of the highest possible standing in science, but, as far as I know, little conversant with the art of treating well and sick infants. I speak so bluntly because I love babies, one and all. Sterilized milk—pasteurized is inferior to it—is superior to unchanged cow's milk, but it is cow's milk still, and not human. Of seven cases, observed this winter, of infant scurvy—a nutritive disorder as far as we can make out—there were three that had been fed, two *exclusively*, one for several months, on sterilized cow's milk.

Mr. President, from the consideration of dangers incurred by the profession through its own fault, I gradually glided into the discussion of injuries inflicted upon the well or sick. That was my main object, and I shall now continue to do so. But you will bear with me when I say just here that what I can bring must be examples only. No book could ever exhaust the subject.

These examples will be taken from infant life exclusively. What I mean to discuss before you, will be the three following subjects :

1. A temporary arrest of development, under the heading of *congenital constipation*, and its injurious treatment.
2. The harm done by *certain modes of local treatment in diphtheria*, and on sins of omission in its management.
3. The uselessness and *harmfulness of operative interference with idiocy and with microcephalus*.

These few I selected for your consideration, premising at once that, after having claimed that science finds its highest glory, ay, its apotheosis, in serving mankind, so my address shall try to convey some useful lessons.

Part of the dangers I propose to discuss are congenital, and either of foetal origin or acquired during birth.

The path of the newly-born is replete with dangers. Bright sunlight beams over ocean and shore after a perilous hurricane, and may meet either a happy landscape or wrecks of ship and man. So the upheaval in a woman's life, with its wonders and terrors, may terminate either in unequivocal felicity or in continued danger. Such a one is the asphyxia of the newly-born, either brief or long; so much the graver the longer; that which occurs after head-presentation, or dates from intra-uterine inspiration, or depends on protracted pelvic pressure, or is complicated with injury done by forceps or with a spontaneous or traumatic internal cephalhæmatoma, is the worst in its results. Langdon Down elicited the history of forceps application in three per cent. of his idiots; Mitchell details the cases of 494 idiots, 57 of whom had a history of birth after a labor of more than thirty-six hours, 22 that of forceps, 29 of asphyxia. In a large number of cases, four or six every year, of idiots presented at the policlinic of the College of Physicians and Surgeons in New York and elsewhere, after having exhausted every other source of idiocy or mental hebetude, often complicated with peripherous physical symptoms,

I am forced back to the probable diagnosis of asphyxia, which then is corroborated by the history of the case. Thus it is that the responsibility of the obstetrician is a very grave one. The future mental welfare of a newly-born may depend on a few seconds more or less of the asphyctic condition. He must allow nothing to interfere between him and the asphyctic baby; not even I should say, a maternal hemorrhage. But now, while he is trying to relieve suspended animation, let him do no harm. There are good methods of resuscitation, some of them very good, provided the tongue is kept well forward. What I am anxious about is to warn against what I have often seen resorted to, the forcible inflation of the lungs through a catheter introduced into the larynx. Though this lies high and appears very accessible, the operation is not always quickly done, time is lost, and the attempt at regaining it has resulted in interstitial emphysema and tearing of lung-tissue, to my own knowledge. Air in the pericardium and pneumothorax have been reported. What I am still more afraid of than these accidents is the abuse of the electrical current. Babies will be saved by it, babies will die of it. The interrupted current, to produce satisfactory inspiration, must act a mere second only. While one electrode remains stationary the other must be applied, for a single instant only, as many times a minute as you mean to have respirations. To leave the current at work for a longer time means over-stimulation and sudden death in the asphyctic newly-born, as it does, in later life, in the (fortunately rare) cases of diphtheritic paralysis of the respiratory muscles.

Omitting, for the time is short, daily dangers produced by, and leading to, frequent grave mistakes—among them I think of septic infection through maternal secretions; through aspiration of decomposed liquor amnii; through the umbilical stump and fungi; through abrasions of the skin by forceps; by the hands of the obstetrician or the nurse; by hot bathing; by bursting pemphigus; through the eroded or gangrenous mucous membrane of the

mouth and alveolar processes, produced by violent procedures of washing; through external wounds such as circumcision; through dressings, sponges, and scissors—omitting also to speak of the immediate dangers of the narrowness of the nasal channels, depending either on congenital contraction or on early catarrh with all its varied consequences—I now turn, Mr. President, to a subject in which I always was greatly interested for its practical importance, and beg of you first to listen to a tale.

A generation ago I had under my care a newly-born, who began to vomit the day after birth, and discharged no meconium. There was an anus and a rectum, which were freely and often injected during the course of several days, with no effect. The vomiting continued, tympanites set in, meconium was brought up, the abdominal veins became dilated, there was fever. Littré's operation was performed, the colon found and incised, and the baby died of peritonitis some days after. The autopsy revealed the following condition:

Below the point of incision lay the colon, turned three times upon itself; three flexures covered each other in such a manner that the subjacent one was always about one half inch longer than the one above it; the lowest of the three was crowded down into the pelvis, entirely compressed and contracted, and contained nothing but a little hardened mucus. The middle flexure contained the same mucus, and no meconium. The upper one was filled with meconium as far as the contracted lumen of the bowel would allow, and its outer left portion was the only one which seemed dilated (before the operation) by gas, and by the meconium crowding down from above. The inferior flexure reached beyond the median line, stretched upward to near the spina anterior superior of the right side, and from there the intestine turned back in an acute angle into the pelvic cavity, doubled upon itself, reached the median line on the right of the empty bladder, and terminated as rectum in its normal place.

The distance from the point of incision in the left hypogastrium to the anus amounted to thirty-five centimetres. The ascending colon was of normal length. The transverse colon was not in its normal position, but stretched out directly to the left spina anterior superior, diagonally, in almost a straight line, formed an acute angle with the upper curvature described before, and gave rise to the pouch I found dilated before and during the operation.

Thus, there was a mechanical obstruction, brought about by the abnormally long descending colon, a condition upon which I look as an arrest of development, inasmuch as its relation to the length of the ascending and transverse colon agrees with their foetal condition in the last part of utero-gestation. By the diagonal situation of the transverse colon, which formed an acute angle with what ought to have been the descending colon; by the mutual compression of the bowels; by its own numerous flexures; by the narrowness of the pelvis of the new-born, which became still more marked by the filling up of the bladder; by the infant's crying, which crowded the thoracic and abdominal contents down upon the intestines; and by the tract filling up with food, fæces, air, and gas, a virtual imperforation of the gut was accomplished.

A brief time after, in the practice of a colleague, there occurred a similar case. A full-term child, no rectal discharge, vomiting, examination with finger and bougie, frequent injections of as large quantities of warm water as the gut would hold, the proposal of Littré's operation, which was refused, and finally, toward the end of the third day, meconium *per vias naturales*. I have seen more such cases since, but never made the same mistakes, for gradually I learned that my mishaps resulted from my ignorance of the fact that what appeared to me extraordinary was indeed but an excessive degree of a more or less normal condition. The ascending colon, after having been formed about the middle of utero-

gestation, is quite short in the newly-born, so is the transverse colon. As, however, the whole length of the colon is considerable, indeed equals three times the length of the mature foetus, the surplus must be found in the descending colon, and mainly in the sigmoid flexure. This occurs in 25 out of 100 cases of newly-born children. It is found, similarly to what I described in my unfortunate case, bent upon itself in several flexures, crowded out of the narrow pelvis, and frequently, in more than twenty-five per cent. of all the cases, extending beyond the median line of the body, not as an anomaly (according to Cruveilhier and Sappey), not in the majority of cases, as Hugnier claimed, who went so far as to operate for imperforate rectum on the right side of the pelvis; but in a sufficient number of cases; and is important enough to attract our attention for a different reason, viz: A fair number of infants of normal size and weight, and fed on healthy breast-milk, suffer from constipation from the first day. There are those who never have a spontaneous discharge; those whose fæces form in hard, round balls of different sizes, unable to pass the sphincter; some who cannot be relieved except by mechanically emptying the rectum. Such cases I have seen by the hundred, and described as *congenital constipation*. It is easy to handle when understood. If we have learned what is the actual fact, that the normal relation of the different parts of the colon may be expected to establish itself toward the sixth or seventh year, we shall have patience. In most cases one or two daily enemata suffice to empty the gut. They must be continued year after year, until the normal end of the anomalous condition will have been reached. Purgative drugs are rarely required—indeed, they are mostly contra-indicated, and when given will do harm. They result in over-stimulation; and paralysis, with more costiveness, is a secondary result. I have seen, as the outgrowth of this congenital constipation, many instances of ulceration, of fetid diarrhoea, of septic auto-

infection, of fevers sailing through months under the flag of malaria and continued fever. These are the cases in which the practitioner with knowledge enough, and sufficient intelligence and tact to individualize, will find the occasional indications to regulate the diet, to administer, in rare instances only, a purgative drug; to insist as a rule, however, upon the avoidance of medicines and the administration of regular enemata, and *non nocere*.

Allow me now, Mr. President, to pass to a subject which never appears trite, though its literature fill a library. I offer no apology for briefly considering what I consider harmful mistakes in the treatment of one of the most calamitous scourges of our race.

In diphtheria one of the dangers is suffocation. That can be easily recognized, and the indications for intubation or tracheotomy, repeated fumigations with ten or fifteen grains of calomel, and for steam, are readily found. The second great danger is from exhaustion and heart failure, which is not merely functional but organic. It is always to be feared, for we all know that apparently mild cases may thus perish. The indication, then, is to save and stimulate nerve strength by alcoholic beverages in large doses, and otherwise. The third great danger is sepsis, which is not to be feared to an equal degree in all cases, for diphtheria confined to the tonsils, with their large amount of fibrous tissues surrounding them, and with their scanty communication with the lymph system, is not liable to produce sepsis, and thereby to terminate fatally. The fourth great danger, in the worst forms of diphtheria, is the over officious and directly detrimental exertion of the attending physician in behalf of local treatment.

It is true, where the diphtheritic pseudo-membrane is within reach, it ought to be either destroyed or disinfected. This is not the place to discuss the methods and the remedies. But we must never forget, first, that only a small part of the pharynx is directly accessible to such

treatment, and that it is only one class of patients who can be subjected to it. In order to be effective the application must be thorough. None but adults or large children, and of them only a small number, will submit to opening their mouth and having applications made. It is that very class of patients only who can be induced to gargle with anything like success, though indeed, gargling will reach only the oral cavity down to the anterior pillars of the soft palate. Smaller children will object, will defend themselves, will struggle. It takes many a good minute to force open the mouth; meanwhile, the patient is in excitement, and perspiration, he screams, and fights, and exhausts his strength. You may, however, succeed in forcing the jaws; then begins the practice of making applications, of swabbing, of scratching off the pseudo-membrane, of cauterizing, of burning. The struggling child will prevent you from limiting your application to the diseased surface. You cannot help injuring the neighboring epithelium; thus, the process will spread; instead of doing good, you have done harm. No application, indeed, can do as much good as the struggling of the frightened child proves destructive. Even the intervals between the medical assaults are no period of rest to the tortured baby, whose fears result in constant mental and physical trepidation. I have seen them dying in defending themselves against the attempted violence, leaving doctor and nurse victorious on the battle-field. It is incredible, but it is true, that more than one has recommended the use, after forcibly separating the jaws, of the electro-cautery or the thermo-cautery on the throat of the baby. It is incredible, for you are aware that the offenders cannot have been, or ought not to be, ignorant of the fact that what they can reach with their instruments is but very little besides the tonsil, and they might have known that the tonsils are not apt to favor the invasion of general sepsis. Why, then, insist upon these cruel and brutal exertions, most of which are discovered and advised by men possessed

of a schematic knowledge of a pathological process, which leads them to kill their patients while trying to destroy a bacillus? *le sujet est mort, mais il est mort guéri*. There is no excuse for them, for there are a great many ways in which an antiseptic treatment of the fauces can be carried out, by the frequent administration, both with internal and local effect, of mild doses of medicines, such as chloride of iron and bichloride of mercury.

Again I emphasize the fact, so often forgotten, that diphtheria, not to speak of the larynx, is mostly and almost exclusively dangerous when located in the nose and naso-pharynx. When the blood-vessels ooze slightly the toxine may be immediately absorbed into the blood, circumventing the lymph circulation altogether; or there are more perceptible diphtheritic membranes, either thin and macerating, or thick and obstructive, either odorless or fetid. The pseudo-membranes swarm with bacilli and toxine, with streptococci and staphylococci, and lead to immense tumefaction between the ears and clavicles, to the formation of multiple abscesses, to hemorrhages, to sepsis. All of these forms of nasal diphtheria require immediate, persistent, and efficient local treatment, for it is safe to say that every case of nasal diphtheria has a tendency to terminate fatally. Every procrastination is a death sentence. The local treatment is to consist in cleansing and disinfecting. In the bad cases, in which the nares are clogged with pseudo-membrane, the cleansing and disinfecting is to be preceded by forcing a passage through the nares with a probe covered with wadding and dipped in carbolic acid. Particularly is this indication urgent when there is sopor, which owes its origin partly to the difficulty of respiration, and partly to the septic condition. Again, I must abstain from alluding to methods and to remedies, for I proposed to say, not so much what is to be done, but what is to be avoided. Still, not to properly propose the proper thing is *nocere*, is committing a direct injury. Therefore, I will say briefly that in making local applications it

is important that they should be made often, every half, one, and two hours, and that the whole diseased surface should be touched. *Si duo faciunt idem non est idem*. Your personal supervision and interference is required, for one day, two days turn the scales. Ointments are not available in the average cases, where the whole naso-pharynx is the seat of the affection. The atomizer will seldom convey a sufficient amount of liquid into the cavities to be of much use. A spoon or small feeding-cup, the nozzle of which is narrow enough to enter the nose, will do fairly well, and will allow the introduction of liquids into the nares in small or large amounts, all of which will enter the throat, and be either swallowed or flow out of the mouth. The irrigator is liable by undue pressure, which cannot always be well measured, to injure the ear. It is true that this cannot take place very readily as long as the whole naso-pharynx is covered with pseudo membrane, but this will not always remain, and then there is a possibility of the injection entering the middle ear. This will take place the more readily the younger the infant, because the pharyngeal orifice of the Eustachian tube is relatively larger and much more funnel-like in the very young than in advanced age. I prefer a small glass syringe with a conical nozzle of soft rubber. It will close up the nostril, the pressure can always be well measured and modified, and it is effective. The injections must be made in the recumbent or semi-recumbent position, frequently. On no condition must a child be taken out of bed for the purpose of having the nares washed and disinfected. I know of many cases in which the patient has thus died through being taken up by either nurse or doctor. There you have at once grave sins both of omission and of commission. I follow it up with one of omission, which is just as bad, because it is just as fatal. As I have personally seen thousands of innocents die of diphtheria, thousands of them in the course of thirty-six laborious years, therefore, with trembling heart, I know whereof I speak; and still they

are dying by the hundred thousand all over the globe, and that is why I preach my old sermons.

*Non nocere.* Do not harm, and permit no harm.

Cervical lymphadenitis resulting from nasal diphtheria, no matter whether it is the result of bacilli or equally septic and fatal streptococci, must be treated persistently and effectively. This treatment must be preventive and curative. The preventive treatment consists in the frequent nasal injections described above. They will reduce the immense tumefactions, partly glandular, partly peri-glandular, which extend often from ear to clavicle, within twelve hours. When large tumefaction has taken place, tincture of iodine and mercurial ointments are useless. Ice externally is rational, but it is useless as long as the infection is not stopped. I have, in a number of instances, injected iodoform, in ether, into the swelled mass. It is too painful and too inefficacious, and does not pay for the agitation, the anguish, and the exhaustion of the unhappy baby. So, indeed, there is no remedy besides the preventive measures, except in long and deep incisions into the immense mass. Do not wait for fluctuation, or even semi-fluctuation, for a great deal of the swelling is inside the fascia. Abscesses, when they form, are seldom large. The formidable swelling consists mainly of necrotic tissue, which ought to be laid open as soon as possible and disinfected. The incision must be a long and deep one—in most cases, from ear to clavicle. The disinfection of the wound may be obtained by subnitrate of bismuth, by tincture of iodine, and iodoform or other antiseptic gauze. No carbolic acid can be used for disinfection, because of its tendency to give rise to hemorrhages. When hemorrhage takes place, it is apt to stop under pressure with antiseptic gauze, but sometimes, large blood-vessels having been eroded, the hemorrhages are very copious. In such cases the actual cautery, acupressure, sometimes the ligature of blood-vessels, has to be resorted to. Avoid perchloride of iron and subsulphate

of iron, for they give rise to a thick coagulated scab, under which septic absorption is apt to take place.

In connection with this subject of diphtheria, I may be permitted to allude to a remedy which, while having a healing and protecting effect in catarrhal conditions of the oral cavity, never had any right to be puffed up into being a remedy for diphtheria. Large doses, however, have been recommended and given, with the result that many years before I published (1876) cases of fatal poisoning by potassic chlorate in Gerhardt's "Handbuch der Kinderheilkunde," I had seen such cases in fair numbers. Both nephritis and methæmoglobinuria, as found by Marchand, were the effect of its administration. Numbers of such cases have been reported since, and still I have read but lately of the same big doses of the same poison praised in this very dread malady. Are we never to learn from our predecessors? Is our experience of so little consequence that its history counts for nothing and must not be consulted? Is diphtheria not dangerous enough by itself? and must it be punished by fatal doses of ours?

The last subject I dare to discuss before you is that of linear craniotomy, *craniotomie à lambeaux*, and circular craniotomy. The two former have been introduced by Lannelongue, who, in 1891, published twenty-five cases of "Enfants arriérés et jeunes sujets présentant, avec ou sans crises épileptiformes, des troubles moteurs ou psychiques." The results he claimed, not only as far as recovery from the operation was concerned, but also as to the improvement in mind which was said to have taken place in a remarkably short time, were so striking and novel that physicians began to hope, surgeons to glory—and the idiotic children? Let us see.

When the brains of operative surgeons were taken with the *furor operandi* on the brains of luckless children, the war-cry was: microcephalus and idiocy. By many the two were identified. Nothing henceforth was required but to open the heads in order to admit light. The lit-

erature on the subject having been quite extensive all over Europe, the American facts I intend to give you will require but a brief introduction.

Which are the underlying conditions of idiocy? I recall to your minds only the following records of autopsies and anatomical examinations both of the coarser or finer tissues: Chronic encephalitis (Jeanneret, Stark, Mierzejewski), either diffuse or circumscribed, frequently syphilitic; diffuse (syphilitic) disease of the blood-vessels (Popoff); arrest of vascular development in the cortex (Luys); inequality of the hemispheres; inequality of the peripherous cortical layer on the two sides; defect of the third frontal convolution and island of Reil; meningo-encephalitis with thickening and adhesion of pia and brain such as may occur after forceps or other trauma; kephalhæmatoma internum, spontaneous hemorrhages; embolism from heart disease; thrombosis from cholera infantum, followed by destruction of cerebral cells and atrophy of cortex. This condition was found in 21 cases out of a total of 343 collected by Starr. He further reports: Maldevelopment and apparent atrophic condition of the brain-structure of the hemispheres, chiefly cortical, the cells resembling those of a new-born child, but with no apparent gross defects in the brain, 32 cases; atrophic or hyperplastic sclerosis, congenital or post-natal, 97 cases; atrophy by softening produced by embolism or thrombosis, and limited to certain arterial districts, 23; arrests of development such as porencephaly, 132 (frequently in a thin cranium); cysts which produced atrophy by pressure, or were associated with the atrophy due to the original lesion, 14; hemorrhages which were discernible by the remains of a clot, or by the hæmatin staining of a cyst of the pia or of sclerotic tissue, 18.

Finally there is among the causes of idiocy hydrocephalus, microcephalus with or without micromyelus, or other changes in the spinal cord, mainly of the pyramidal tracts;<sup>1</sup>

<sup>1</sup> This connection has often been observed (Aeby, Thiry, Flesch, Anton). In their slow evolution (Hervouet) from the fifth month of

and lastly, premature ossification of the fontanelles and sutures.

Meningo-encephalitis in some form or other is very common. Here belongs one of Lannelongue's early cases described by Bourneville. It was operated June 22, 1890, was kept in the hospital to February, 1891, was then carefully nursed and trained, but got no better, and finally died of broncho pneumonia. What did the autopsy reveal? Pachy- and lepto-meningitis, normal sutures, wormian bodies between them, and a thin and transparent skull.

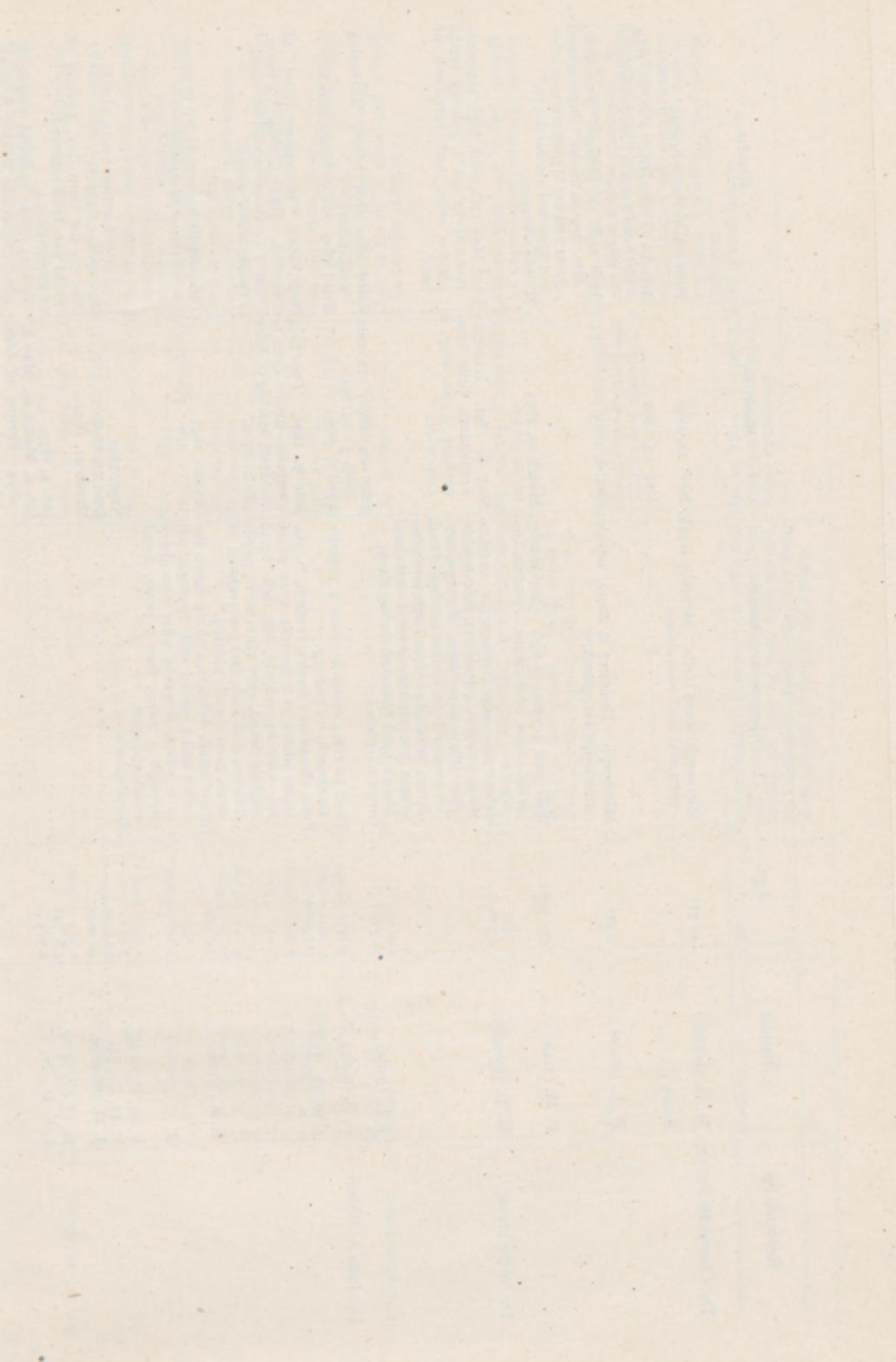
If we be told that the operation is made for microcephalus—indeed, many of the histories intrusted to me exhibit that diagnosis though but few measurements be given (in one of which the head had a circumference of 50 ctm. [20 inches])—what does it mean? Which are the causes of small-headedness? Is it always premature ossification? Very far from it; the copious literature of microcephalus proves the contrary. Taquet reports 26 skulls of idiots, none of them ossified. Bourneville demonstrated 12, all of them with persistent sutures, 3 even with pathological disconnections. With me it is the rule to see microcephalus with open sutures. While the anterior fontanelle need not be large, the sagittal sutures mainly, but also the others, are open and remain so for years—four, five years, and more. If, finally, the bones coalesce, let me ask the question, is there a sound man who can believe or hope that the linear or circular reopening of the skull will encourage brain growth which did not exist while the sutures were still patent?

Now, premature ossification, in our sense, does not

uterine life to the completion of the fourth year, many changes are liable to take place. The number of the cells of the anterior horns was found diminished by Hervouet, Steinlechner, Gretschnikoff, Schottenberg. Other arrests of development are also frequent. Bourneville mentions phimosis, and patent foramen Botalli, ectopy of testicles, and hypospadias. The two latter I met with several times.

mean absolute absence of the sutures, which is almost never seen. Vrolik's case of a boy of seven, and Cruveilhier's of a child of a year and a half, without any discernible sutures, are exceptional. Nor is it of any importance to know that, according to Huschke, the cranium does grow up to the sixtieth year, or that Pommerel puts synostosis between the forty-first and fifty-first year, or Sappey complete obliteration of the sutures beyond the eightieth. What concerns us is to know that the rapid growth of the brain is impeded normally, if at all, by a virtual closure of the sutures about the fifteenth month of life, and that, according to the period of this closure, the intellect is either but little or much impaired, or that the most serious motory, sensitive, and sensory disturbances are brought about by it. Between a slight impairment of mind and complete idiocy every possible degree and manifestation is met with. Virchow's old dictum, that cerebral functions may depend on size and symmetry of cranium and brain, still holds good. He never said there was no other cause of the disturbed cerebral equilibrium, and a recent writer who gloats over his own assertion that this teaching of Virchow's has been put to rest, lost his own equilibrium in his critical effort.

The nature of premature ossification can be best studied in such cases as exhibit that anomaly to a slight degree only, and symmetrically; namely, where the closure of the cranium takes place, say between the fifth and tenth months of life, instead of the fifteenth. There you have a solid capsule, with deep digital impressions, like those of an adult, and narrow or absent foramina emissaria. The dura mater is firmly attached, rather anæmic, unless a secondary morbid process resulted in hyperæmia; in the same condition is the substance of the brain; it is pale and dense; its convolutions are apt to be flattened, remain in that condition when the dura is cut or bulges out like an elastic mass; the ventricles are narrow and contain but little, if any, liquor.



| Reported by             | Patient.                   | Age.                    | Diagnosis and history.   | Operation.  | Results.   |
|-------------------------|----------------------------|-------------------------|--|---|--|
| Dr. Charles McBurney.   | M. H. (female) .....       | 12 yrs .....            | Microceph. since birth. Mentally weak, petit mal, and convulsions.   | Nov. 11, 1892 .....   | Petit mal not so frequent.   |
|                         | Same .....                 |                         |  | Dec 19, 1892 .....  | Attacks as formerly. Feb. 20, 1894, Dr. Starr's report; much improved in many ways.  |
|                         | W. L. (male) .....         | 6 yrs .....             | Microceph. Deficient in mind, unruly, no intelligible speech.  | Oct. 6, 1893 .....  | April 11th, no change. Feb. 20th, Mrs. Seguin thinks "improvement great and out of proportion to other not operated similar cases." No improvement.  |
|                         | F. M. (male) .....         | 7½ yrs .....            | Well until 4 years of age. Convulsions, fever, right hemiplegia, aphasia, epilepsy.  | March 27, 1893 .....  |  |
| Dr. Willy Meyer .....   | M. B. (female) .....       | 2 yrs .....             | Microceph., oxyc., premature ossification, anemia, paral. ext. inf., strabismus, idiotic expression. Forceps, strabismus, and insufficient motility of both lower extremities since birth, lately frequent convulsions, general and local (face), head retracted during sleep. | May 8, 1891. Linear craniotomy, little hemorrhage, 9 ctm. long, 2 ctm. wide.            | Died May 11th, with high temperature (up to 106°), gritting teeth, sudden cries, and retraction of head.   |
|                         | J. B. (male) .....         | 4 yrs .....             | Tumor suspected .....  | June 19, 1891. 12 ctm. long, 3 ctm. wide.   | Died after four hours, increasing temperature.   |
| Dr. John A. Wyeth ..... | B. S. (male), N. J. ....   | 4 yrs .....             | Skull 50 ctm., epileptic since 4 months, no speech, no hearing.  | April 7, 1890 .....   | Died after twelve hours, shock.  |
|                         | I. W. H., Ind .....        | 11 mos. ....            | Font. closed at 4 weeks, restless, "cataleptic attack at 8 months, after which tal. vaso-eq. mainly left, left hand slightly flexed, eyes conv. mov., pupils dilated, dull look, jerky movement of arms, cran. small, pointed."  | Jan. 7, 1891. Two long trenches above eyes to occiput, tearing of bone from dura.       | Sept. 1893, "triumphant letter" of mother. Jan. 31, 1894, "4 years, but 2 or more behind in mind," speaks a few words.   |
|                         | R. R., Conn. ....          | 14 yrs .....            | Infant small, delicate, sinking spells the first 2 and 3 weeks with cyanosis, fell at 2 years, 6 weeks after convulsive through 2 years, free 5 years, head small, epileptic.  | Oct. 20, 1891 .....   | Temporarily improved; No improvement (letter of mother).   |
|                         | F. H. G., Conn. ....       | 5 yrs .....             | Microcephalic .....  | Nov. 1891 .....   | Died after fourteen hours, shock.  |
|                         | E. H. G., Me. ....         | 22 mos. ....            |  | Dec. 16, 1891 .....   | Died on the sixth day.   |
|                         | J. O. (female), N. Y. .... | 20 mos. ....            |  | March 21, 1892 .....  | Died on the third day, portion of right par. bone removed. No improvement.   |
|                         | H. C. C., N. Y. ....       | 4½ yrs .....            |  | Jan. 4, 1893 .....  | "Feb. 14, 1894, splendid physique, after excitement jerking in sleep, recognition better, knows family, kicks when tied in chair, cannot stand without assistance, does not grasp or hold fast, less rolling eye, not much crying, left hand always closed, hearing good, delighted with music." |
|                         | I. F. D., N. Y. ....       | 2 yrs .....             |  | Jan. 4, March 29, May 8, 1893. Portion of both par. and occ. bones near vertex removed. |  |
| Dr. W. W. Keen .....    | M. E. (female) .....       | 4 yrs. 7 mos. ....      |  | Nov. 19, 1890, Feb. 17, 1891.   | Recovery. Moderate improvement.  |
|                         | K. K. (female) .....       | 1 yr. 7 mos. ....       |  | March 12, 1890, Feb. 3, 1891.   | Recovery. Moderate improvement.  |
|                         | I. L. H. (male) .....      | 1 yr. 4 mos. ....       |  | Jan. 16, 1891 .....   | Died of sudden heart failure one and one-quarter hour after operation.   |
|                         | E. S. (female) .....       | 3 yrs. 6 mos. ....      |  | Nov. 7, 1891 .....  | Recovery. No improvement.  |
|                         | L. F. (male) .....         | 2 yrs .....             |  | Oct. 14, 1891, March 16, 1892.  | Recovery. No improvement, but slept quietly.   |
|                         | G. F. C. (male) .....      | 3 yrs. 2 mos. ....      |  | Oct. 20, 1891 .....   | Died the same day.   |
|                         | H. T. (female) .....       | 6 yrs. 6 mos. ....      |  | May 29, 1891 .....  | Recovery. Slight improvement.  |
|                         | P. I. (female) .....       | 6 yrs .....             |  | 1891 .....  | Died after three hours.  |
|                         | H. H. (female) .....       | 3 yrs. 6 mos. ....      |  | Nov. 2, 1891 .....  | Recovery. No improvement.  |
|                         | F. S. (female) .....       | 3 yrs. 2 mos. ....      |  | March 15, 1893 .....  | Recovery. Slight improvement.  |
|                         | F. W. (female) .....       | 1 yr .....              |  | April 22, 1892 .....  | Died after a week.   |
|                         | H. T. M. (female) .....    | 2 yrs. 6 mos. ....      |  | April 27, 1893 .....  | Died after thirty hours.   |
|                         | M. D. (female) .....       | 3 yrs. 3 mos. ....      |  | May 29, 1893, June 22, 1893.  | Recovery. No improvement, skull as thick as adult's.   |
|                         | Dr. Burney Sachs .....     | M. D. D. (female) ..... |  |   | Sept. 20, 1893. ....   |
| Female .....            |                            | 4½ yrs .....            | Walked after 2 years, spoke a little in 2 years, two convulsions at 15 months, one at 29 months, more idiotic since, lost speech, irritable, unruly, sleepless. No fontanelles, circumference of head 31 ctm., nose to occipital prominence 30 ctm., binauric 32¼ ctm.         | Jan. 9, 1891 .....  | Died suddenly in three and a half hours after rallying.  |
| Male .....              |                            | 4 yrs .....             | Forceps and asphyxia, some convulsions between first and second year, teething late, walked after 3 years, drags left leg, no speech. Skull small in front 45 ctm., binaur. 28½ ctm., naso-occipital 27¼ ctm., right.  | Sept. 14, 1891, linear right under ether.   | Laughed, stood up in bed, played as never before, otherwise no improvement.  |
| Same .....              |                            |                         |  | Nov. 20, 1891, left, chloroform, more hemorrhage than in first operation.               | Unconscious, vomited much. Died eleven hours after operation. Autopsy: skull thick, dense bands of fibrous tissue under opening in skull, sutures obliterated, anterior lobes of both hemispheres very irregular in fissuration, convolutions half size.   |
| Female .....            |                            | 5 yrs .....             | Four convulsions between 15 months and 3½ years, discharge of ear since third month but hearing fair, eyes normal, no intelligible speech, eats the floor, does not call for food or defecation.   | Jan. 22, 1891. Trepine, chisel, rongeur, like previous operations.                      | Died that afternoon.   |



The brain when removed from the cranium is apt to remain hard, and slices of moderate thickness retain their consistency.

This condition of a relative hypertrophy of the brain, or rather, of a normal brain locked up in an abnormal skull, I have met with quite a number of times, before and since I published, in 1857 and 1859, my papers on the etiological and prognostic importance of the premature closure of the fontanelles and sutures of the infantile cranium. A similar case was published by Mauthner in 1857, in the *Oesterr. Zeitsch. f. Kinderheilk.*; but even some of the greatest pædiatrists, such as Rilliet and Barthez, had and have since overlooked the condition. It was only Bouchut who quoted a description of this condition in his manual. This class of children are apt to exhibit a good or fair intellect during their early lives. They smile at the proper time, are robust and apparently healthy, but with that complication every morbid condition is liable to develop dangerous symptoms; a moderate broncho-pneumonia is apt to become complicated with convulsions, and may prove fatal; or, without any apparent complication, there will be slight symptoms of irritation, contractions of the extremities, clonic convulsions, sopor, death. Generally, there are no unilateral symptoms; where they occur, they are rather the result of a convulsion, followed by a local lesion, than of the original compression of the cerebral tissue. As I have met with such cases in large numbers, I always examine the heads of babies affected with any inflammatory or febrile disease. Simple cases, like the following, will be met with: A boy of eleven months was seen November 1, 1857, after having been quite well before. In brief intervals there was fever, vomiting, clonic convulsions, dilated pupils, and death on the sixth day. The head was of fair size, symmetrical. There were six teeth; the first had appeared in the upper jaw. The fontanelles were virtually closed three months previously.

Many cases are of this simple character, but many more

are less hopeful. Paralysis, epilepsy, idiocy are met with in those whose crania were closed at birth or soon after, and every possible symptom of paralysis or irritation, unilateral or bilateral, may become visible. Besides, we must not imagine that premature ossification is always of the same character. It is true it depends on a local nutritive or inflammatory disorder of the bone; but it cannot always be known whether this process is localized or complicated. It may be independent of the brain. Zuckerkandl says so, and I know it. It may be complicated with similar affections of the brain, and with premature growth and development of the bones of the face and of the teeth and the rest of the body. Therefore it is that in many cases premature ossification is universal, and the teeth come early, and the upper teeth first. In others the teeth may come at the normal time, or even later, and the bones of the trunk and extremities may by no means be more advanced than normally; also the brain symptoms may be of the most various kinds. Among my cases are the following: In Vanderveer's, the fontanelles closed at nine months; no vision, eyes roll, head not sustained, frequent convulsions, body well developed; idiocy. In Willy Meyer's, anæmia, paralysis of the lower extremities, strabismus; idiocy. In Wyeth's, restlessness, "cataleptic attack," talipes varo equinus, mainly of the left side, left hand slightly flexed, spasms of the internal recti, pupils dilated, jerky movements of arms; idiocy. Now, what is the diagnosis of premature ossification?

The latest writer on the operative treatment of microcephalus has the following to say in regard to diagnosis: "As changes of the cranium cannot be recognized with certainty, anamnestic points are of the greatest importance. Where the history excludes protracted and difficult labor, the application of forceps, the presence of asphyxia at birth, or cerebral affections and kephalhæmatoma after birth, the symptoms of traumatic epidemic, or endemic meningitis, or the local signs of diffuse or circum-

scribed encephalo-meningitis, or the motory or sensitive disturbances of porencephaly, all of which may result in deaf-mutism, blindness, paralysis, either general or local, or in local convulsions or contractions—where all these can be excluded, it is permissible to assume the presence of premature ossification, and to perform an operation.”

Still many of these symptoms may occur in premature ossification also, the diagnosis of cerebral affections leaving still so much to desire ; I know, however, we can do better in the direction of a diagnosis. What I have to propose in that line is old, I know, but for many I am certain it is new, for if it were not, many of the reckless operations on the helpless, unfortunate young ones would not have been performed. In this respect I totally disagree with my famous friend, M. Allen Starr, who asserts that it is at present impossible to determine absolutely the pathological condition present in any given case, without an exploratory operation.

In a great many cases I have succeeded in making the diagnosis with certainty. Some are unmistakable ; they are those which were born with their sutures closed, and with early cerebral symptoms of a general and bilateral nature. Still some difficulty may arise about those who are first presented when from one to three years old or older. Indeed there are some of the operative cases in my hands, three and four years old, which are supplied with the notice that the sutures were closed at that time. Indeed they should be, for the time of the normal obliteration is within the first half of the second year of life. Now there are but few parents but can answer the following questions : Was there ever a fontanelle ? Was the head ever soft on top and pulsating ? How old was the baby when he first smiled ? When did he walk or attempt to walk ? When did the first tooth come ? Was it a lower or upper tooth ? Are the teeth strong and healthy, or not ? Are the right and left limbs equal in power ? If there be twitching or rigor are they more visible on one side than on the other ?

The replies to these questions make your diagnosis. The first appearance of teeth in the upper jaw is an almost constant symptom and characteristic (though irregular protrusion of teeth may occur in rachitis). Uncomplicated cases will also stand on their feet early. It appears that in many the whole osseous tissue ossifies at a nearly equal pace. The superior maxilla, however, appears to participate in this general process more than the rest. It is noticeable that these children with premature ossification are generally the first born.

The more irregular the cerebral symptoms, the more unilateral, or confined to one limb or a set of muscles, the greater is the probability of a complication of brain disease with premature ossification. In such cases of older children the history elicited must be positive as to the absence of a fontanelle in the first year.

What are the indications for the operation? Starr says when the condition is one of arrested development of cerebral tissue it may be of service. When the skull is markedly microcephalic from early union of sutures the increased space given to the brain by the operation appears to stimulate its growth and development. It may be performed where medical treatment is inefficient, in hemiplegia, sensory defects, imbecility with or without epilepsy, aphasia, and athetosis. He is also of the opinion that if great caution and little time be used the dangers of the operation can be avoided. European operators go far beyond these indications. One claims to have transformed mania into quiet dementia—a change which is common enough without saw and chisel—by destroying fibres of association (Burkhardt); but while another operates for septic meningitis, recent hemorrhages, and headaches (Horsley), another restricts the surgical interference to abscess, trauma, and tumor (Bourneville).

Lannelongue's first report of 1891 comprised twenty-five cases of linear craniotomy with remarkable results; a great many improvements were said to have taken

place in the twenty-four survivals. No such statistics have ever since been submitted; on the contrary, the mishaps of the surgeons of both hemispheres make them appear more fabulous than ever. But the brilliant example was not lost. It was about the time of the tuberculin excitement. Pulmonary tuberculosis and idiocy in all its forms could be eliminated from the surface of the globe by simple means—the millennium was coming.

I hold in my hand, Mr. President, the reports of cases operated upon for so-called idiocy, or for so-called microcephalus, by such American surgeons only as I could reach personally, so as to have their tales verified from their own lips. The cases I command are 3 of Dr. Charles McBurney, of New York, 2 of Dr. Willy Meyer, of New York, 8 of Dr. John A. Wyeth, of New York, 14 of Dr. W. W. Keen, of Philadelphia, 3 of Dr. Barney Sachs, operated upon by Dr. Arpad Gerster, of New York, and 2 of Dr. I. Vanderveer, of Albany, N. Y. On these 33 cases 41 operations were performed. Of 33 there were 14 deaths and 19 recoveries. The deaths did not occur in the very young ones alone, but also in those four, five, and six years of age. Most of them occurred soon after the operation, six within a day. Cause of death is not always given or known, in one it was attributed to the anæsthetic, a number of them developed a very high temperature which was not explained, inasmuch as not even the dura was injured. Many died of shock a few hours after the operation.<sup>1</sup> The final report as to their mental and general condition was as follows: No history obtained, 1; uncertain, 1; no improvement, 7; slight improvement 7; "some," 1; much improvement, 2.

Permit a few more words as to the results of the operation.

Dr. Vanderveer, of Albany, N. Y., reported the case

<sup>1</sup> According to Akerman the causes of death after the performance of the operation, and depending thereon, were acute sepsis, loss of cerebro-spinal liquor, shock, collapse, fever, acute anæmia, and the anæsthetic employed during the operation. Altogether the deaths amounted to from fifteen to twenty per cent. of all the operations collected and discussed.

of a girl two years of age. Forceps operation of four hours' duration resulted in extensive lesion of the scalp. Never developed mentally; had as many as twenty-five convulsions daily, with and without vomiting, after the age of three months. Operation October 14, 1893, on the left side of cranium, four and one-half inches long, extending to nearly the lambdoid suture, and one inch wide. Left hospital October 30th. Seventeen short days after that, November 15th, the family physician reports that since November 8th the child did not sleep well, and had returns of the nervous spells or partial convulsions; but before that, ten days after leaving the hospital, the child seemed brighter and took more notice of things around her.

The following case was also reported by Dr. Vander-veer:

Arthur McKee F——, born May 22, 1891. Previous to his birth a miscarriage at six weeks and a still-birth. Mother had albuminuria every time (syphilis?). Teething at nine months. Then the fontanelle was noticed to have closed. Examined July 1, 1892. No vision, eyes roll, head not sustained, body well developed. Convulsions frequent. Operation October 6, 1892, on left side from frontal to occipital bones, four inches long, one wide. November 2d appeared "more natural." Second operation May 19, 1893, on the right side. Examination of the left side of the skull at this time did not give evidence of any great development of the brain, as there was rather a tendency for the dura to sink in than to rise above the surrounding portions of bone. November, 1893, more quiet, does not see, recognizes sound, moves arms and legs, and stands when supported.

Dr. John E. Wyeth reports a case which appears to be one of premature ossification with cerebral complications, though there be no exact measurements. The fontanelles are said to have closed when the child was four weeks old. The operation was performed when the child was eleven months old. January 7, 1891, two

long trenches were dug from above the eyes to occipital bones, and joined posteriorly, the bone torn off from the dura and elevated so as to produce a fracture anteriorly. On September, 1893, a "triumphant letter" was received from the mother. On January 31, 1894, however, she writes that the child was now four years of age, but two or more behind in mind. It may be remembered that this is three years after the operation.

Léon Gallez says, in his "La Trépanation du Crâne," p. 417, 1893, of craniotomy that *elle procure le plus souvent une amélioration évidente*. That is an over-estimation. Personal knowledge of the facts he does not claim. Firstly, the mortality of the operations is very great. Secondly, a large number of cases are admitted not to have been benefited at all. Thirdly, when amelioration has been reported, what does it mostly amount to? It would be absurd, theoretically speaking, to deny the power of observation or the veracity of those who report; but who are they in most instances? In the majority of cases they are loving, hoping mothers. Who has not seen to what extent the idiotic child in a family—frequently the first born—is petted, made most of, admired, and how every ray of mental light is reflected from a magnifying mirror of adoring and anxious scrutiny. Besides, many of the reports are made soon after the operation, and therefore become rather valueless. Moreover, after the performance of that serious operation, made for a special purpose, attention and training are doubled; and progress attained through assiduous training was never questioned even before the times of Edward Seguin. Finally, a difference of from one-half to two years amounts to a great deal in a child of one or two years of age, in the possibility of mental improvement.

A temporary relief, either entire or partial, of epilepsy, does not mean much, for any operation on any part of the body is apt to modify its course.

Altogether, the mortality and the insufficient results in those who survive have exerted a discouraging influ-

ence on my surgical friends. What here follows are the opinions of some of them as they were expressed but a short time ago.

In a letter dated June, 1892, when he had operated on twelve cases, Dr. Keen makes the following statement: "I would at present operate on cases under eight years of age, but not over, and in cases with sufficient physical vigor to make recovery probable. I would only operate on one side at a time, but make the incision as long as possible, from the forehead to the occipital bone, and possibly, or even probably, T-shaped by a vertical incision toward the ear. My results have been those of improvement in almost all the cases that survived; an improvement makes the operation worth doing. But do not promise too much intellectually or even physically."<sup>1</sup> In a letter I received from the doctor lately (1894) he says: "The mortality is very high, and in my experience the gain is moderate, but possibly worth the risk."

Dr. Wyeth formulated his experience for me on February 22, 1894, as follows: "My operations were eight.<sup>2</sup> There were three deaths, one dying of hemorrhage on the table, two of shock, of whom one after twelve hours, and one with temperatures of 104° and 105° F., on the fourth day. There are two varieties of microcephalus, one due to premature ossification and consequent compression; and one due intrinsically to deficient brain development. These can be made out by incision through scalp, when the white cartilage lines can be seen in the intercranial sutures. Operation is useless in these cases, unless cyst or tumor be present. In the other cases, temporary improvement at least can be expected." In a letter published in the *Journal of the Arkansas Medical Society*, October, 1893, he says: "The operation is so dangerous that I shall hereafter undertake it only in cases of very marked microcephalus with undoubted symptoms of compression."

<sup>1</sup> *Journal of the Arkansas Medical Society*, October, 1893.

<sup>2</sup> The histories Dr. Wyeth was so good as to place at my disposal refer to eight cases, with nine operations.

In reference to these operations Dr. B. Sachs says he has not advised them since 1891. He regards the danger "extremely great in all young children, the shock and uncontrollable hemorrhage from the scalp and bone being greater than most children are able to stand." And Dr. Arpad Gerster, who performed the operations for Dr. Sachs, expresses himself as follows: "The operation of linear craniotomy is a very serious one in small children, on account of the unavoidable hemorrhage accompanying it. Yet, in view of the otherwise hopeless outlook, I am still willing to undertake it in well-nourished individuals, at the direct request of their parents. As our diagnosis is very unsatisfactory as to the condition of the brain in microcephalus, the operation is often the only test of the presence or absence of cerebral structures which, if present, might develop, if the confinement due to premature ossification of sutures be relieved by craniotomy. On the whole, my standpoint as regards the future of the operation, is not a very cheerful one." Finally, Dr. McBurney is only willing to perform the operation on the responsibility of a medical man in whose judgment and knowledge he has absolute confidence.

Lastly, and unfortunately, what is the result of the operation in reference to the intended enlargement of the cranial cavity? In a letter dated March 11, 1894, Dr. Vanderveer says: "Both Dr. Hun and myself have the impression that the skull has not expanded, but that there is some reason for believing that the resulting cicatrix in the scalp and membranes has caused a diminution rather than an enlargement of the brain." Bourneville finds a narrowing of its interior by thick fibrous bands encroaching upon it in a case the drawing of which he publishes, and the cranium I here present, placed at my disposal by Dr. Burney Sachs, and twice operated upon by Dr. Arpad Gerster, proves the exact condition alluded to by Bourneville. Instead of enlarging the cavity the operation has diminished it. The whole lower aspect of the first craniotomy wound is thickened by about half a centi-

metre of a newly formed hard tissue ; it presses down upon the brain which the operation was expected to relieve. The first operation was performed on September 20, 1891, the second on November 26th. Thus the changes you here perceive are the results of sixty-seven days revengeful action on the part of nature.

After all, Mr. President, that I could contribute to the knowledge of the operative interference with the condition of "enfants arriérés," of idiocy, of microcephalus, it appears that, in the face of so many deaths and so few results, the operation is not promising of good to mankind. The operations thus far performed do not effect what they were intended for, they do not even enlarge the cavity. Wyeth knew that well when he made a circular groove and raised the bone from the dura mater forward, leaving a bridge of one and a half to two inches, which he fractured and allowed to heal. For a similar reason and in a similar manner Dumont,<sup>1</sup> treated a child of fourteen months with epileptoid attacks and strabismus. I am not informed of the condition of the bones or fontanelles. An incision was made from the forehead over sagittal suture until it reached the spina occipitalis externa. Galea and periosteum were severed down to the tubera parietalia. A number of trepanations were made, each of 2.5 ctm. in diameter. Gouge and saw were used so as to connect these openings and render the bone movable. The galea was sutured, no drainage applied, and the wound healed. Two months after the top was still movable and there was no epilepsy, and less strabismus. I am not acquainted with the final outcome. It is not improbable that the extensive denudation of the bone will have bad results in the shape of necrosis. I should rather believe that a circular incision and removal of the galea and periosteum, merely as far as required for a sufficient grooving of the cranium, would be safer.

If any cases be at all amenable to treatment by such an operation, they must be those of uncomplicated prem-

<sup>1</sup> Corresp. Schweizer ä., 23, 1893.

ature ossification of the sutures and fontanelles. Such a one appears to have been that described by Akerman. He operated on a child aged sixteen months. Forehead narrow, circumference 40.1 ctm.; mother did not notice a fontanelle. Circumference of head was not changed two and one-half months after the operation, and the angles of the wound had filled up; ten months after the operation circumference was 42 ctm., the usual increase, perhaps a little less, of that age. And the final report, when the child was three years old, was that there were less convulsions than before the operation, and the mother says the child "knows the difference between me and a stranger."

An additional case was published by Dr. I. A. Dibrell, Jr.,<sup>1</sup> of Arkansas. It was that of a girl three years of age, circumference of head 16 inches (40 ctm.), bipar. diam. 4, occipito-frontal,  $4\frac{5}{8}$  inches. There was "complete ossification of all the sutures and fontanelles." Ten months afterward the operator reports: "I am unable to perceive the least improvement in the child's condition."

Dr. Roswell Park<sup>2</sup> operated on a girl of four years, for premature ossification. No result.

Dr. Willy Meyer's case died two days after the operation, with unexplained high temperatures.

Dr. Wyeth's case was operated on when eleven months of age; when the child was four years of age, the mother admits he was "two or more years behind in mind."

Dr. Vanderveer's child was operated when thirteen, and again when twenty-four months old. A year afterward he was "better in some respects."

And that is all there is of it.

The relative impunity of operative interference accomplished by modern asepsis and antisepsis, has developed an undue tendency to, and rashness in, handling the knife. The hands take too frequently the place of brains. Who does not know that the alleged safety in operating

<sup>1</sup> Journal Arkansas Medical Society, October, 1893.

<sup>2</sup> Medical News, December 2, 1892.

tempts some of our skilled operators, and the credulous public, into useless or even contra-indicated procedures? Who is not aware that but too frequently the first principles of diagnosis are not practised before an abdominal wall is opened? Is it enough to know that clean fingernails, and nurses conversant with corrosive sublimate, and disinfected catgut, are almost universal safeguards against immediate fatal termination? Is it sufficient glory to don a white apron and swing a carbolized knife, and is therein a sufficient indication to let daylight into a deformed cranium and on top of a hopelessly defective brain, and to proclaim a success because the victim consented not to die of the assault?

Such rash feats of indiscriminate surgery, if continued, moreover in the presence of fourteen deaths in thirty-three cases, are stains on your hands and sins on your souls. No ocean of soap and water will clean those hands, no power of corrosive sublimate will disinfect the souls. Goethe once said the most interesting book that could be written would be a treatise on the errors of mankind. Let us see to it that our mistakes may not swell that book.



