

**TRANSACTIONS OF THE IOWA
STATE MEDICAL SOCIETY, FOR
THE YEAR 1891, MEETING AT
WATERLOO, APRIL 15, 16 AND 17.
VOL. IX**

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IOWA STATE MEDICAL SOCIETY

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PUBLISHED BY THE VIS MEDICATRIX.

DES MOINES:
PRESS OF P. C. KENYON,
1892.

The Society does not hold itself responsible for the views enunciated in
the papers read at its meetings.

PROCEEDINGS
OF THE
FORTIETH ANNUAL SESSION
OF THE
IOWA STATE MEDICAL SOCIETY

HELD AT WATERLOO, APRIL 15, 16, 17, 1891.

THE PRESIDENT'S ADDRESS.

W. D. MIDDLETON, A. M., M. D., DAVENPORT.

Ladies and Gentlemen of the Iowa State Medical Society:

Occupying, by your suffrages, the position of your president at this meeting, I am required to address you, presumably on "the state of the country" (medical), during my term of office.

You have seen fit, however, before my time, to divide our country here into the various "sections," you know, and since the chairman of each will address himself to the unfolding before you of all matters pertaining to his special "portfolio," it would be sadly unwise for me to attempt that sort of general review. A very few points, therefore, seem to me to be reasonably within my jurisdiction, and to them, for a few minutes only, I will call your attention.

There probably never was a time in the history of any advancing profession when an enthusiastic follower thereof might not have found himself thoroughly imbued with the idea that the particular point in space occupied by his calling at his time was, from a professional standpoint, if not a *pinnacle* in the professional landscape, at least rapidly rising ground. And every one of us has often felt encouraged by some such notion as he went about his work from day to day.

And most of us could have found ourselves able to sympathize with the medical worker of Jenner's time if *he* had loudly pro-

claimed the dawn of vaccination as a pinnacle, and the event of its introduction as an *era* in his chosen calling. Indeed we all do, this minute, still so regard it with him. Precisely such a time—yea, a time of infinitely greater promise—does it seem to me has just dawned on our calling, and though I must expect much dissent among you from my belief on this point, its herald is the strange Paraboloid or Tuberculin of Robert Koch. And here I would not be understood as claiming that this special substance itself is to lift us to greatness, or to accomplish wonders in our attempts at cure, but it is easy to fancy large numbers of its successors, evolved by the same mysterious agencies, with effects on pathological conditions beyond our wildest dreams. A cursory glance at the steps seeming to lead up to this material reveals these facts:

That before very long a century will have elapsed since Jenner's first deliberate vaccination (for he vaccinated James Phipps on the 14th of May, 1796).

That fully aware of the underlying theory of vaccination, and sorely thirsting for equal power to confer immunity, in like manner, from all the exanthemata which they daily come in contact with, practitioners of medicine and other men of natural science let the years slip by, from that time almost to the present, without further conquest in this direction.

That while the first seventy-five years of this intervening century developed nothing, either by accident or by deduction, of benefit akin to the first addition to science, the last quarter of a century seems to fairly seethe with preparations for some momentous discovery.

That it is now scarcely twenty-five years since the spectre of spontaneous generation was finally laid, and that one can date the solid foundations of the modern germ theory of disease as late as 1870.

That we all have full appreciation of the manner in which this has affected all our working theories as they have been manipulated by Lister, by Cohnheim, by Koch, by Pasteur, and others in special fields.

That in this latter quarter of the century nearly all the schizomycetes, having pathogenic influence, have been discovered and classified, and their life history made out, and that in it are these salient facts:

That they are vegetable organisms, with the same necessities for "harmonizing with their environment" that restrict and circumscribe all other animate beings.

That their power of multiplication is something that might "stagger arithmetic," in that one cell may become many millions in twenty-four hours.

That they nearly all require oxygen, but in varying degrees, and that they may all be more or less modified by their environment and by their pabulum, which of course may not be varied without very wide limits.

That while the actual vegetable cell itself may be said to be a tender plant, in relation to temperature, a variation of a very few degrees sufficing to arrest all its vital activities, like many better known organisms it throws off spores, or resting cells, whose resistance to these variations and other perturbations is something remarkable.

For instance: of course it may be germinated at once by proper surroundings, or it may lie dormant for months and for many years; or, completely desiccated, while its natural surroundings are moist, it may be blown about by all the winds of heaven; or, while its natural temperature is somewhere near that of the mammalian body, it may be frozen for weeks and months, and has been known to resist even a temperature of -100° C., or lower; or, on the other hand, it has been seen to germinate after the water in which it was contained had been boiled for an hour. (The high temperatures are the most destructive, but that many spores escaped the process of boiling was long the only foothold for the theory of spontaneous generation.)

Further, a general view of the subject enables me to discover that the men who were in possession of this information, who had especially the forms of these organisms clearly understood, and their behavior under certain atmospheres and with certain forms of pabulum well ascertained, were equipped for safe and speedy passage along the path that Jenner vainly tried to tread nearly a century before. He considered his vaccine matter, as you know, a "variola vaccinæ," and he fully believed that the inoculation of the cow with variola would produce a virus attenuated by its passage through her economy that would as effectually prevent variola as a previous attack of the disease itself. He had not arrived at the deduction—so common a part of the men-

tal store of all of us to-day—that all of these diseases suffered from but once were germ-produced and conferred immunity for the future by virtue of the fact that their special pabulum in the body, once exhausted by their ephemeral existence, was never reproduced, even in a long life-time. He had never seen cultures of these germs and noticed the arrest of growth brought about by the gradual destruction of the nutrient matters in a given test-tube. These men had seen these things, and the deduction was easy, as were the subsequent steps. The first real progress was made with the germ of anthrax. This cause of splenic fever was seen to affect mammalia and not to affect birds. Its rules of life set down a temperature above 100° F. as fatal, and the blood of the birds marks seven or eight degrees above this. Pasteur found that a chilled fowl could be successfully inoculated, and he also found that when so inoculated, the disease, fully under way, could be arrested by restoring to the bird its natural warmth. He found, further, that with certain manipulations by heat and by oxygen he could produce a mild germ whose introduction into the body of an animal caused much less severe perturbation than that of the grave or unmodified disease, and yet as thoroughly consumed all the anthrax pabulum contained therein as it did. And here was the Jennerian idea scientifically brought to the aid of the sufferers from anthrax by laboratory experiment—by synthesis, as it were.

You are well aware, I know, that along this line all the attempts at investigation and cure of these diseases have been made; that, given a certain microbe as causative of any disorder, his characteristics have been fully studied and his life history clearly mapped out, always with a view to this same subtle modification of his virulence by *attenuation*. And in all this, as you know, we all have constantly seen a brilliant future for the profession in true Prophylaxis.

These are the lines of work that caused the elder Flint to say in almost his last writings :

Looking into the future in the light of recent discoveries it does not seem impossible that a time may come when the cause of every infectious disease will be known; when all such diseases will be preventible, or readily curable; when protection can be afforded against all diseases such as scarlet fever, measles, yellow fever, whooping-cough, etc., in which an attack confers immunity from subsequent contagion; when, in short, no constitutional disease will be incurable, and such scourges as epidemics be unknown.

And in truth the advances may be almost miraculous along such lines. Inoculation with attenuated virus may become as common for all the other microbic diseases as it now is for variola, and cases of these ailments so be rendered as great a rarity as those of small-pox are to-day. Yea, it is not without the bounds of possibility that such disorders might finally become extinct from simple lack of fuel for their "ineffectual fires."

But, as I take it, it is an entirely different, if not new, line of attack that the Paraboloid approaches the stronghold of the germ-produced Tuberculosis. This substance is not an attenuation; it bears in its composition no germ, modified or unmodified, unless by accidental contact; and it sustains only about the same relation to the germ (though the simile won't bear straining) that honey does to the bee or coral to the actinozoa which produce it; it is a Ptomaine.

Koch does not publish his method of manufacture, probably for very good reason, and indeed he has been forced out of his usual cautious mode of progress far enough already, in that his product has been scattered among many hands less skillful in experiment than his would have been; but "contraband sources of information" probably give us an approximation to the truth when they describe his process as being carried on in an incubator, from the upper part of which the *product* of tubercle-bacilli-change in gelatine is dialyzed into a lower compartment, and it is probably this dialyzed material that we know as the Lymph.

Now of the Ptomaines I will recall to your minds one or two salient points you well know. First, that they are generally exceedingly subtle organic poisons, of alkaloidal nature, probably existing in great numbers, from the effects of various microbes upon organic material, and perhaps the best known, or at least the most spoken of, are Tyrotoxin, the cheese and milk-poison, and Sepsin, the poison which we all strive to exclude from wounds. Second, that they, the product of the life of various micro-organisms, are to the organisms themselves poison, and limit the extent of their action. The yeast-plant is often used in illustration of this latter fact, and points in its so-called catalytic action are undoubtedly parallels. This organism, as you know, flourishes in a saccharine solution, and the effect of its life-work is the change of sugar into alcohol and carbon dioxide. But it does not flourish indefinitely, neither to the limit of its