

ened, reducing their yield below the normal. It might be claimed also that from the reduced amount of pollen, and the shock of the injury, the yield of the emasculated stalks was also reduced below the normal, and thus that removing the tassels really reduced the yield.

All claims of decrease or increase rest on mere probabilities, unless the control experiments are known. The produce of a like number of rows in the corresponding situations on the other side of the corn-field would give the normal yield. Simpler, though less accurate, the average yield of the untreated portion of the general field would suffice for a standard.

The great number of undeveloped grains on the ears of isolated corn-stalks and on the borders of fields may be due to self-fertilization; but, as a like frequency of undeveloped grains occurs on the cobs of corn whose tassels have been blasted by the western hot winds, the non-development may be due to lack of pollen.

As it does not seem reasonable that there was any lack of pollination in the Cornell University corn-field, the results of the control experiments may prove the claimed increased yield, and may also be another proof of the injury of self-fertilization. But these results may show that the decreased yield of the abnormally self-fertilized stalks more than counterbalances the increased product of the maimed stalks.

DICE McLAREN.

Baltimore, March 31.

Homœopathy in Relation to the Koch Controversy.¹

EVEN the authority of Dr. Koch's eminent services has been unable to uphold parataloid in the terrible search-light of the Virchow and Chiari necropsies; and it is questioned whether the reported improvement of Kaposi's cases of lupus promises permanent cure in that form of tuberculous disease. Experience with Koch's fluid in this country has afforded results no more favorable. Koch, nevertheless, hopes "to extract from the tubercle bacillus its curative substance alone," and there remains on all sides enduring hope that true curative power can be liberated from the parataloid.²

Is it generally known that the homœopathic school has for many years made use serviceably, not poisonously, of Koch's material in the treatment of consumption and other tuberculous disease? For twenty years this most misunderstood and maligned body of observers has recognized the indispensable curative service of the products of disease, and, in addition, the necessity³ for their extreme attenuation, before they might be safely administered in sickness. "Tuberculinum," "anthracin," and "syetoin" belong with such drugs as arsenic, which develops dangerous lesions if given to persons in health, but is curative in certain disturbed conditions. The testimony given by these physicians appears singularly fitting, and their experience would be of vital importance at this time of wholesale experiment threatened by the followers of Koch. I will now attempt to describe the cultus and professional training of these men who are accused by the dominant school of failure to accomplish any thing for medical science, of bigotry, of narrowness, and of "having a fixed belief."⁴

The college requirements for students of homœopathy do not differ materially from those of the older school. Many of these students are already graduates of Harvard or of foreign medical schools, who afterward finish their studies at a homœopathic college.

"By their fruits ye shall know them." Among the noteworthy results of a professional education in the methods of this school

¹ Abstract of a paper by C. F. Nichols, M.D., in *Popular Science News*, April.

² See Report of the Imperial and Royal Society, Vienna; *Medical News*, Jan. 17; *Boston Medical and Surgical Journal*, March 5; *Medical Record*, March 7, 14, 28; *Lancet*, March 28.

³ "Koch usually injects only one-millionth of a gram of the active principle. From the effects of this inconceivably minute quantity some idea may be formed of the almost uncanny energy which the substance would display if let loose, so to speak, in the fulness of its untamed strength" (Sir Morell Mackenzie, in the *Contemporary Review*). "One part to a ninety-eight billionth of the bulk of the whole body in a man weighing fifteen stone," is Dr. Hine's estimate (*London Lancet*, Feb. 14, p. 357).

⁴ See Professor H. C. Wood's Yale address, also addresses published in *Medical and Surgical Reporter*, all previous to November, 1889.

has been the discovery of unexpected remedial agents far in advance of other medical investigators. The homœopaths have long recognized the life resulting from death in natural growths, and have not hesitated to explore filth, decay, and disease for morbid products or nosodes. Diseased material from animals and plants, and the poisonous secretions of reptiles, fishes, and insects, are found to be indispensably curative in desperate or obscure diseases, but are only thus helpful when the powers of each have been clearly differentiated by a thorough proving. Is it generally known what is meant by a proving or study of a remedial agent? Let me, then, briefly show you the labor, the research, and the professional skill required to make a proving.

A proving is made by administering to several healthy persons a substance or extract, and recording its effects, with the ultimate object of using the proven material in disease. Each agent must be studied¹ with regard to its chemical, functional, and the whole pathological effects in the body. Study the pulse, actions of the heart, lungs, brain, kidneys, liver, systems of nerves, blood-vessels, lymphatics, glands, digestive organs, machinery of the senses, each anatomical part and tissue. Study the connection of the proven material with eruptions, parasites, contagions, climates, influences inherited or acquired. Note the resemblance of this to other drugs and its antidotes. Above all, there must be perceptions of mental states, tact to avoid deceit, artistic insight, and quick sight; for all these matters, sought out by stethoscope, ophthalmoscope, sphygmograph, microscope, analyses of the urine, blood, etc., and the whole armentarium of a modern physician, enter into the preparation of a proving, and must be brought together with laborious, painstaking care before the proving is offered.

Professor Constantine Hering prepared in the year 1850, for his colleagues of the medical college at Allentown, Penn., a scheme of twenty closely written pages, — simply directions for epitomizing and recording their provings. The systematic habit of German university training which has given their prestige to German scientists was thus early brought to bear upon students in this matter.

A proving is accepted, and enters materia medica and text-book, only after its characteristics have been confirmed by scores, often by hundreds, of independent observers.

At last the proving stands, full of interest, a new discovery, an elaborate, sometimes a learned analysis, entirely unknown to old-school methods, and one more weapon is ready for use.

The authorized works of homœopathic materia medica are very numerous: fully eleven hundred remedies are available.² Many practising physicians carry in memory the chief characteristics of the greater proportion of these.

Provings, and the repertories founded upon them, naturally differ in value; yet a curious observer must, I think, find in the general result the evidence of such persistent industry and scientific research, that all statements which assume a lack in either respect obviously proceed from uninformed persons.

Regarding attainments in literature and the liberal sciences *per se*, — a welcome addition, no doubt, to the real service of medical men, and the supposed lack of which on the part of these practitioners has been made the subject of grave comment,³ — to four bright spirits only, in all these two thousand years of physicians, have seats been assigned among the immortals. Hippocrates, Galen, Sir Thomas Browne, finally Dr. Holmes, have severally gained a place in letters. Each of these is a rebel and an innovator, for without rebellion and innovation was never yet wrought any good thing. But fifty years have passed since the death of Hahnemann, himself a man whose vast learning was fully recognized in his time.⁴ Meanwhile neither poet nor sage has yet chanced to be "an ornament to his profession." The fact is, its founders have been at work so hard that they have had no time to hold up their heads to sing.

¹ Usually in a so-called college of provers.

² Boenninghausen's *Repertory*, an early publication, might fairly be compared with Roget's *Thesaurus* or a modern lexicon. The recent compendiums (of which three are available) aggregate many hundred pages of closely printed text.

³ See letter in the *London Times*, Jan. 8, 1889; also Dr. D. K. Newell's annual address before the Massachusetts Medical Society, 1890.

⁴ See the writings of Jean Paul Richter and Broussais.

Let us now inquire what has been accomplished for medical science by the elaborate provings of the homœopaths; for the *raison d'être* of a proving has not been explicitly given in the preceding pages. Hippocrates, Hahnemann, and Sydenham hypothesized, and finally taught, that the proving or testing of medicines upon the healthy would show the exact curative power of each remedy in disease. This doctrine was formulated by Hippocrates in the aphorism or axiom *similia similibus curentur* ("cure by similars"). Jenner by vaccination, and Pasteur and Koch by their inoculations, have more recently illustrated the effects, under this hypothesis, of a limited class of remedies; but to Hahnemann and his successors alone, with their elaborate system of full descriptive provings of nearly every known medicinal agent, is due the gradual establishment of a law deduced from the original working hypothesis of Hippocrates.

That the law of similars cannot be explained *a priori* (i.e., upon any material or mechanical grounds) is, to my mind, at once to be admitted before we can accept it as a fundamental principle or starting-point, exactly like that of electricity or chemical force. The law is, that disease is cured by an influence similar to that which produces it. However daring the first assumption of this law of similars, it has now passed through the stages recorded in the history of every established science; i.e., it has been submitted to induction, deduction, and verification.

Mere observation of instances is not inductive, and does not lead to science until, through the study of instances, we rise to fixed law. With such a law, prophecy or deduction must be possible; and the accuracy of this prophecy or verification will be a fresh test of the original law. The homœopathic law, being tested in reference both to normal and the diseased conditions of the human body, has the logical advantage of a double verification, and may thus be said to be rediscovered every day in the practice and provings of each homœopathic physician.¹

It is, then, law, not luck, which has enabled the homœopaths to reach their very consistent results. Their remedies in common use are an emphatic demonstration of the practical value of the law of similars: such as mercurius, which causes eruptions, salivation, and diarrhoea, and is undeniably curative in these forms of disease; quinine, which, causing ague symptoms, relieves them; nitroglycerine, which removes the form of congestive headache inevitably produced by it in a healthy person. And if the imperfect discovery of Koch be, indeed, a conspicuous and brilliant blossom of medical science, it is the startling fact that this law of similars plucked the flower long ago, and, aided by its accessory of safe dilution or attenuation, has made intelligent use of its discovery.

To confine our attention to testimony bearing directly on the treatment of tuberculous disease. The proving of tuberculinum shows, as its primary effect, evidence of a deposit of tubercle at the base of the brain. Severe and unbearable headaches are a prominent symptom, with local congestion, delirium, and insanity; more remotely and as later manifestations, cough, purulent sputa, and diarrhoea. The remedy tuberculinum has been for years helpfully given in meningitis, hereditary and inveterate headaches, hectic fever, night sweats, cough with tuberculous expectoration, and all early stages of phthisical disease.

It would thus appear, that, in those first stages of consumption which alone are claimed to be curable by the injection of Koch's fluid, the homœopaths have made safe yet effective use of the same materia morbi as Koch's.² Instead of protection by boiling, cultivation, etc., a high attenuation has been efficient.³ This attenuation, made chiefly by means of dilute alcohol, is claimed to accomplish something beyond the mere subdivision of material.

¹ "Science presents itself as exact and verified knowledge; . . . if observation and verification cannot demonstrate the real existence of the genus, philosophy itself, in any sane sense of the word, is annihilated" (Dr. F. E. Abbot, *The New Ideal*, May, 1889).

² See *New Organon*, July, 1879, pp. 342, 439, 449; Dr. Swan's *Morbific Products*, 1896; Burnett's *New Cures*, 1885 to 1890; J. A. Biegler's *Report*; C. Hering's *Guiding Symptoms*, vol. x. (now in press).

³ Attenuations thus far made by the French experimenters have been unsatisfactory, both on account of the uncertain strength of the dilutions, and also by reason of changes of quality wrought by cultivation of the original material. The writer is aware of Koch's statement that the albuminoid principle of paratoloid is insoluble in alcohol. The simple dilution of the latter avoids this difficulty, chiefly by checking its coagulative effect.

The irritant particles are mechanically detached, while the curative principle is separated and developed. The degree of attenuation used always ranged as high as a so-called thirtieth potency. After Darwin's statement of the minuteness of the spores of *drosera* capable of producing their characteristic action, the efficiency of a potency or attenuation does not to many persons seem improbable; and we will leave, for the present, the mathematics so frequently discussed.

It will readily be seen, however, that treatment by nosodes might soon degenerate into an enthusiastic, thoughtless, and empirical use of these remedies, to the exclusion of others, if the inference were drawn that each microbic disease could be annihilated by its own potentized product; and it has naturally been found impossible to remove, by the administration of its nosode alone, the whole ultimate disturbance, in the form of secondary symptoms, sequences, and diseases of distant parts of the body. Indeed, other remedies might, even from the beginning of treatment, be more serviceable than these. Thus, in faithful treatment, it is sought to accomplish an end far more subtle than the mechanical removal of bacilli. Holding them to be merely parasites, among which may exist many forms not inimical to health, but even fulfilling protective service in the body, the homœopath does not consider it essential that its bacillus be seen in the atom of diseased material which he prepares for medicinal use (the bacillus would almost necessarily be there, for each characteristic parasite is the carrier of the disease in which it dwells); but it is the deadly material¹ in which the microbe-parasite feeds which alone is desired for proving, finally for prophylaxis and therapeutic use.²

The ancient school attacks the new, having known but little of its large work; but the time has gone by for dismissing without a hearing such claims as led Wilson, the anatomist, to employ homœopathy for himself, and Sir Sidney Ringer to incorporate, *verbatim*, large sections of its materia medica in his authoritative work.

These are the stars in the firmament of homœopathy, — men of affairs, men of business, scholars, warriors, poets, statesmen, whose practical wisdom has moulded the destinies of the world, — Sir William Hamilton, Archbishop Whateley, Carl Wilhelm Siemens, Lord Lyndhurst, Augustus de Morgan, Secretary Seward, Lord Lytton, Charles Reade, Wendell Phillips, Theodore Parker, Helen Jackson, Miss Phelps, Balzac, Gambetta, D'Israeli, Bismarck.

Instead of such awkward use of its weapons that the force powerful enough to combat the disease must destroy also the invalid, homœopathy, *die milde macht*, has quietly employed its methods, "strong enough," as Wendell Phillips once remarked to the writer, "to wait until its accumulating facts would speak for themselves."

C. F. NICHOLS.

Boston, April 15.

Iroquoian Etymologies.

I WISH to make a correction. In my article (*Science*, April 17, 1891), instead of the word *ratikowanên*, on p. 219, second column, at the end of the first paragraph, read *ratikowanên's*. This error was perhaps due to an oversight of the copyist in transcribing with a typewriter from my script notes, and overlooked in revision.

J. N. B. HEWITT.

Washington, D.C., April 19.

BOOK-REVIEWS.

Power through Repose. By ANNIE PAYSON CALL. Boston, Roberts. 16°. \$1.

THE tone and object of this book are thoroughly good. The warning that it sounds is similar to that which Dr. Weir Mitchell so earnestly voiced in his "Wear and Tear." We are wearing and tearing too much and too fast. We are losing the faculty of

¹ The bacillus not only maintains its own parasitic life in the body, but appears itself to manufacture, or subverts the nutrient function to produce various toxic substances which are poisonous, though separated from the bacillus (see *Popular Science News*, March, 1891, p. 43, quoted from *Edinburgh Medical Journal*).

² See Swan's *Nosodes*; Burnett's *New Cures*.