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THE CENTURY MAGAZINE has done an excellent thing in printing two diverse views of manual training side by side in its January issue. The expression of the two views is typical of the discussions now so prominent on this subject, and illustrates excellently why the movement in favor of manual training is so strong, and why the opposition to it is so weak. Superintendent MacAlister of Philadelphia states succinctly just what is being done in that city in the line of manual training. This summary is clear and comprehensive; his own approval of it, based on experience, is unqualified; and he tells us that manual training has won the confidence of the community. Superintendent Dutton of New Haven follows with a brief statement of the work in his city, and states that "the effect of these several forms of industrial effort upon teaching generally is good." Both of these gentlemen deal with facts with which they are perfectly familiar, and their favorable judgment upon manual training, while unqualified, is carefully and thoughtfully expressed. The gentleman who opposes manual training is Superintendent Marble of Worcester, Mass. His argument, if such it can be called, is an hysterical juggling, with more or less crude theories, and not a single fact is cited throughout his paper. An approach to a fact is the statement that a phase of manual training was tried fifty years ago, and proved a dead failure. This, however, is not true; nor, if it were, would it prove what Mr. Marble thinks it does. Manual training, as now comprehended and expounded, is not more than a dozen years old at most, and the most cursory knowledge of educational history should have acquainted Mr. Marble with this fact. The same writer talks about "the protestations of those self-constituted philanthropists," "the overthrow or subversion of the public school," "that virile quality of thought and mental power which it is the province of education to beget," "the materialistic tendency of manual training," and so on, and succeeds in demonstrating only that he is in absolute ignorance of what manual training is, and of what it is intended to accomplish. When we read a paper such as this, coming from a professed educator, it is the more easy to understand and to condone the crude speculations and outrageous theories concerning education that so often emanate from persons in no way connected with the school system of the country.

FERDINAND VANDEVEER HAYDEN.

PROF. FERDINAND VANDEVEER HAYDEN, M.D., Ph.D., LL.D., who died in Philadelphia on the morning of Dec. 22, was born in Westfield, Mass., Sept. 7, 1829. Early in life he went to Ohio. In 1850 he was graduated from Oberlin College, and soon afterward read medicine at Albany, N.Y., receiving his degree from the Albany Medical College in 1853. He did not begin the practice of medicine, but in the spring of the year of his graduation was sent by Prof. James Hall of Albany, with Mr. F. B. Meek, to visit the Bad Lands of White River, to make collections of the cretaceous and tertiary fossils of that region. This was the beginning of his explorations of the West, which continued with little interruption for more than thirty years.

In the spring of 1854, Dr. Hayden returned to the Upper Mis-

souri region, and spent two years in exploring it, mainly at his own expense, although he was aided a portion of the time by gentlemen connected with the American Fur Company. During these two years he traversed the Missouri River to Fort Benton, and the Yellowstone to the mouth of the Big Horn River, and explored considerable portions of the Bad Lands of White River and other districts not immediately bordering upon the Missouri. The large collections of fossils he made, were given partly to the Academy of Sciences in St. Louis, and partly to the Academy of Natural Sciences of Philadelphia.

As one of the members of the Geological Survey has recently said, these collections furnished the data for profitable scientific investigation; and the researches then begun mark the commencement of the epoch of true geologic investigation of our Great West. These collections attracted the attention of the officers of the Smithsonian Institution; and in February, 1856, Dr. Hayden was employed by Lieut. G. K. Warren, of the United States Topographical Engineers, to make a report upon the region he had explored; so that the results of his labors during the three previous years were utilized by the government. This report was made in March of the same year, and in May following he was appointed geologist on the staff of Lieutenant Warren, who was then engaged in making a reconnaissance of the North-west. He continued in this position until 1859, when he was appointed naturalist and surgeon to the expedition for the exploration of the Yellowstone and Missouri Rivers, by Capt. William F. Reynolds of the Corps of Engineers of the United States Army, with whom he remained until 1862. The results of his work while with Lieutenant Warren were published in a preliminary report of the War Department, and in several articles in the 'Proceedings of the Academy of Natural Sciences of Philadelphia for the Years 1857 and 1858,' and more fully in a memoir on the geology and natural history of the Upper Missouri, published in the 'Transactions of the American Philosophical Society,' Philadelphia, 1862. This paper also included chapters on the mammals, birds, reptiles, fishes, and recent mollusca of the region in which his geological investigations were carried on. During this time also he found time to make notes upon the languages and customs of the Indian tribes with which he came in contact. These notes were embodied in 'Contributions to the Ethnography and Philology of the Indian Tribes of the Missouri River,' published in the 'Transactions of the American Philosophical Society,' Philadelphia, 1862; in a 'Sketch of the Mandan Indians, with some Observations illustrating the Grammatical Structure of their Language,' published in the *American Journal of Science* in 1862; and in 'Brief Notes on the Pawnee, Winnebago, and Omaha Languages,' published in the 'Proceedings of the American Philosophical Society,' Philadelphia, 1869.

In May, 1862, Dr. Hayden was appointed acting-assistant surgeon of volunteers by the surgeon-general of the United States Army, and was sent to Satterlee Hospital in Philadelphia. He was confirmed by the United States Senate as assistant-surgeon and full surgeon of volunteers on the same day (Feb. 19, 1863), and sent to Beaufort, S.C., as chief medical officer, where he remained for one year, when he was ordered to Washington as assistant medical inspector of the Department of Washington. On the 19th of February, 1864, he was sent to Winchester, Va., as chief medical officer of the army in the Shenandoah valley. Here he remained until May, 1865, when he resigned, and was brevetted lieutenant-colonel for meritorious services during the war. During the remainder of the year 1865 he was employed in work at the Smithsonian Institution. It was during this year that he was elected professor of geology and mineralogy in the University of Penn-

sylvania, — a position he held until 1872, when the increased executive duties in connection with the Geological Survey of the Territories induced him to resign.

In the summer of 1866 he undertook another expedition to the Bad Lands of Dakota, under the auspices of the Academy of Natural Sciences of Philadelphia, for the purpose of clearing up some doubtful points in the geology of that region, and returned with large and valuable collections of vertebrate fossils, which were described in a memoir published by the Academy of Natural Sciences of Philadelphia in 1869. From 1867 to 1879 the history of Dr. Hayden is the history of the United States Geological Survey of the Territories, of which he was geologist-in-charge, and to the success of which he devoted all his energies during the twelve years of its existence. In this time more than fifty volumes, together with numerous maps, were issued under his supervision. One of the results of his surveys, and the one in which he probably took the greatest interest, was the setting-aside by Congress of the Yellowstone National Park. The idea of reserving this region as a park or pleasure-ground for the people originated with Dr. Hayden, and the law setting it apart was prepared under his direction. The work of the Geological Survey of the Territories had its consummation in the Atlas of Colorado, which increased greatly our knowledge of one of the most interesting portions of the Great West. In 1879, after the disbanding of the Survey of the Territories, Dr. Hayden received an appointment as geologist on the newly organized United States Geological Survey. For about three years he was occupied in the completing of the business of the Geological and Geographical Survey of the Territories, and the preparation of the final results of that survey. His health had already begun to fail, but early in 1883 he asked to be relieved from the supervision of the printing of the reports, and during the three following seasons he undertook field-work in Montana. By the latter part of the year 1886 his health had become so poor that he was confined most of the time to his bed. He then resigned his position as geologist, closing an honorable connection with the government that included twenty-eight years of actual service as naturalist, surgeon, and geologist. To the general interest in science excited by the enthusiastic labors of Dr. Hayden, in his geologic explorations, is due in a great degree the existence and continuance of the present United States Geological Survey.

In 1876 the degree of LL.D. was conferred upon him by the University of Rochester, and in June, 1886, the same degree was conferred upon him by the University of Pennsylvania. Dr. Hayden was a member of the National Academy of Sciences and of many other societies scattered throughout the country. He was also honorary and corresponding member of a large number of foreign societies.

As to Dr. Hayden's personal character, those who were personally associated with him know best how genial he was, and how sincere and enthusiastic his desire to forward the cause of science. Although impulsive at times, he was generous to a fault. His subordinates all knew that each one stood upon his own merits, and that due credit would be awarded his successful efforts. The same spirit actuated him in respect to those not immediately connected with him. His views are expressed as follows in one of his earliest reports, when speaking of those who had preceded him: "Any man who regards the permanency or endurance of his own reputation will not ignore any of these frontier men who made their early explorations under circumstances of great danger and hardship."

His ideas were broad and liberal. He aimed to make a thorough astronomical, topographical, geological, and botanical survey of the Great West, with a view to the development of its mining and agricultural resources. The greater part of his work for the government and for science was a labor of love.

SCARLET-FEVER REPORT.¹—II.

DR. R. G. ECCLES of Brooklyn, N.Y., does not believe that scarlet-fever ever arises except from a pre-existent case, and says, "The following from Dr. H. B. Baker of Lansing, Mich., will help to explain some possible cases of so-called *de novo* origin:

'The Michigan State Board of Health has received information from Dr. Sifton, health-officer of Sutton's Bay Township, which illustrates in a striking way how this country gets contagious diseases from the old countries. Oct. 2, 1887, a family arrived in Sutton's Bay, Leelanaw County, direct from Norway. The family came over in the steamship "Ohio," of the Inman line, reaching New York, Sept. 30. Scarlet-fever was on board the steamer during the passage, one child dying before the landing, and "several more were sick in the same way." One child of this family was taken sick with scarlet-fever the day after reaching New York. The family, however, proceeded over the New York Central and the Lake Shore and Michigan Southern, to Michigan; then over the Detroit, Grand Haven, and Milwaukee, and the Grand Rapids and Indiana, to Traverse City; then to Sutton's Bay. Another child of the family has since come down with the disease. The family had a certificate, signed by the surgeon of the steamer, that they had been protected by vaccination against small-pox: so they passed without detention the quarantine authorities at the port of New York, after they had been exposed to a contagious disease which causes more deaths by far in this country than small-pox causes.'" He gives the following as an instance of the communicability of scarlet-fever which came under his own observation: "Arthur G., aged eight, came from the country to his Brooklyn home in sound health. A case of scarlet-fever (convalescent) being in the house upon his arrival, he was within twenty-four hours removed to other quarters, where there were no children and no disease. In a few days he had a severe attack. By perfect isolation no new cases occurred. Many such instances of short contact giving the disease have come under my observation. The best illustration my experience affords occurred during a visit I made to Wyandotte, Kan., in the winter of 1883. Mrs. S. had been visiting relatives in a distant State. In one family she called upon, they had scarlet-fever. The children were not with her. On her return home in a few days, a daughter, aged seven, was taken sick with what proved to be scarlet-fever. At this time there was not a case but itself in the town, nor had there been for many months. In their trouble, neighbors called, and within two weeks there were ten or more cases. A relative who helped them in the care of the child had three cases in his own family, he proving to be one of the victims. Two customers of his who were waited upon by him while indisposed, but not confined to bed, had each cases among their children after the exposure. No other source of contagion was possible. It must here have been carried in the clothing. Mrs. H. (my wife's mother), living in the country, visited a neighbor some miles distant, where a child was sick with scarlet-fever. A few days after the visit, her own son, aged four, who had not been exposed, was taken sick of this disease and died. There was no possible way of carrying the contagion other than upon the mother's clothes. Boards of health should require all cases to be reported to them by district sanitary inspectors, aided by physicians, the police, and the public. Their duties should be the ferreting-out of every case of contagious disease. To-day the position of inspector is a sinecure. Those holding such positions are well paid for doing almost nothing. Nearly half the cases of contagious diseases that occur, physicians do not see, nor even hear of, until some dangerous complication arises to give alarm. If they pursue a mild course, they are not heard of by the board of health, and the public schools and public conveyances scatter their virus broadcast. Conscientious physicians, too, are put at a disadvantage by their unscrupulous competitors for public favor. The doctor who is known to faithfully report every case loses his practice. People are afraid to call him, because he interferes with the progress of the children at school, and often cuts off their source of livelihood, where they carry on some industry at home. Very many physicians have boasted to me that they never report such cases unless they become so serious that they are likely to lose them. Nor can any law compel them to do so, as it is easy to introduce the claim that they had not made out a positive diagnosis. Let the inspectors, who are independent of the patients' friends, discover and report them, using all possible means as assistance."

In reference to a plan for preventing the spread of the fever, Dr. Eccles says, "The evidence we have, indicates that the germs or spores float as impalpable dust in the air. It is found by experiment that wet gauze, by evaporation, is colder than surrounding

¹ Continued from *Science* of Dec. 16, 1887.