

toward scientific training became national, the prospective institutions were sufficiently endowed for the initiatory stages, and each was free to suit its organization to the wants of its locality; the scientific schools previously established had been organized and developed in accordance with strict scientific principles, and their example afforded a powerful opposition to the influences which tended to hold the new schools to a lifeless routine of mechanical exercises on the one hand or to a feeble modification of the methods of classical colleges on the other. The reports of the year indicate that the future of these institutions as schools of applied science, conducted according to the laws of intellectual progress and directed 'to the liberal and practical education of the industrial classes' is assured, and that in the main the character of each school is to be determined by the material condition of the section in which it is placed. Thus, in the East, the tendency is to the training of engineers and scientific experts; in the great agricultural section of the West and South, agriculture and horticulture receive most attention; while in the mineral region of the Pacific section mining and metallurgy are made prominent; but even where these special tendencies are marked, other branches of scientific and industrial instruction have received attention proportionate to the demand."

Interesting facts are presented illustrating the practical advantage of these institutions to our industrial progress. The Commissioner adds that there has been marked advance in the general organization of these schools and in their preparation for efficient work in science and mechanics.

SCHOOLS OF MEDICINE.

The number of schools of medicine, dentistry, and pharmacy reported to the Bureau during the year was 106. These had 1,337 instructors and 11,830 students. The regular school of medicine and surgery reported 64 institutions, 915 instructors, 8,279 students, 2,506 graduates, 46,065 volumes in libraries, \$1,685,250 in grounds, buildings, and apparatus, \$214,347 of productive funds, yielding an income of \$13,186, and tuition receipts to the amount of \$289,398. The eclectics reported 6 institutions, 51 instructors, 448 students, 211 graduates, 3,000 volumes in libraries, \$161,000 in grounds, buildings, and apparatus, and \$8,960 receipts from tuition. The homœopathists reported 11 schools, 158 instructors, 1,215 students, 363 graduates, 39,800 volumes in libraries, \$349,000 in grounds, buildings, and apparatus, and \$95,471 receipts from tuition fees.

The dental schools report as follows: number, 12; instructors, 161; students, 701; graduates, 218; volumes in libraries, 505; value of grounds, buildings, and apparatus, \$68,000; receipts from tuition fees, \$60,734.

The pharmaceutical schools number 13; instructors, 52; students, 1,187; graduates, 380; volumes in libraries, 5,175; value of grounds, buildings and apparatus, \$155,000; receipts from tuition fees, \$25,487.

COLLEGIATE AND PROFESSIONAL DEGREES.

"This Office," says the Commissioner, "is informed that the better colleges and universities of the country are becoming increasingly careful in the bestowal of honorary degrees. At the same time it is well known that the sale of diplomas by persons who have obtained control of collegiate and university charters by purchase or fraud is still going on. This disgraceful proceeding has already injured the reputation of American learning and the value of American degrees in other countries; but the Federal Government did not create the corporations which are causing this scandal and has no power to cancel their charters. It is for the authorities of the State to move in the matter and thus vindicate the honor of the nation and of American scholars."

The following summary of degrees in course and honorary conferred by reputable institutions of learning needs no further explanation:

The number of degrees of all classes conferred was, in course, 9,999, honorary, 396, divided as follows: letters, in course, 3,631, honorary, 114; science, in course, 990, honorary, 6; philosophy, in course, 222, honorary, 31; art, in course, 46; theology, in course, 222, honorary, 159; medicine, in course, 3,814, honorary, 4; law, in course, 1,000, honorary, 78. Of these degrees, classical and scientific colleges conferred 6,367 in course and 388 honorary; colleges for women, 674 in course and 1 honorary; professional schools, 2,958 in course and 7 honorary.

EDUCATIONAL BENEFACTIONS.

The total amount of educational benefactions is \$3,103,289, which is distributed as follows: universities, and colleges, \$1,389,633; schools of science, \$49,280; schools of theology, \$397,852; schools of law, \$100,000; schools of medicine, \$18,562; institutions for the superior instruction of women, \$241,820; preparatory schools, \$97,191; institutions for secondary instruction, \$759,817; institutions for the deaf and dumb, \$49,134.

EDUCATIONAL BENEFACTIONS.

During the year 1878 the sum of \$3,103,298 was presented to various educational establishments in the United States by private individuals.

Of this sum \$1,389,633 were placed at the disposal of universities and colleges. We regret to find that while Theology received nearly \$400,000, but \$49,280 were devoted to Science, and \$18,562 to Medicine. Schools of Law received \$100,000. The deaf and dumb received about the same amount as Science.

The University of California received \$125,000, \$25,000 to build a library building, and \$50,000 to purchase books. This amount did not include a collection of works of art and a library valued at \$50,000.

Yale College received \$189,590. Boston University \$30,000 towards the purchase of the Shepard Collection of minerals. From various sources Harvard University received \$177,207; Dartmouth College, \$35,000; Cornell University, \$27,663; Union College, N. Y., \$84,000; Oberlin College, O., \$25,000; University of Virginia, \$50,000 to endow School of Geology and Natural History; Wellesley College, \$155,000; Thayer Academy, Mass., \$417,000; Deerfield Academy, Mass., \$88,000; Dean Academy, \$38,000.

PALÆONTOLOGY.

THE DEVONIAN INSECTS OF NEW BRUNSWICK.

In a memoir, on the Insects in the Devonian of New Brunswick, Mr. S. H. Scudder draws the following conclusions in regard to the earliest known insects:

"It only remains to sum up the results of this re-examination of the Devonian Insects, and especially to discuss their relation to later or now existing types. This may best be done by a separate consideration of the following points:

"There is nothing in the structure of these earliest known insects to interfere with a former conclusion that the general type of wing structure has remained unaltered from the earliest times. Three of these six insects (*Gerephemera*, *Homothetus*, *Xenoneura*) have been shown to possess a very peculiar neurulation, dissimilar from both Carboniferous and modern types. As will also be shown under the tenth head, the dissimilarity of structure of all the Devonian Insects is much greater than would be anticipated; yet all the features of neurulation can be brought into perfect harmony with the system laid down by Heer.

"The earliest insects were Hexapods, and as far as the record goes, preceded in time both Arachnids and Myriapods.

"They were all lower Heterometabola.

"They are all allied or belong to the Neuroptera, using the word in its widest sense.

"Nearly all are synthetic types of comparatively narrow range.

"Nearly all bear marks of affinity to the Carboniferous Palæodictyoptera, either in the reticulated surface of the wing, its longitudinal neurulation, or both.

"On the other hand they are often of more and not less complicated structure than most Palæodictyoptera.

"With the exception of the general statement under the fifth head they bear little special relation to Carboniferous forms, having a distinct facies of their own.

"The Devonian Insects were of great size, had membran