

SCIENCE

FRIDAY, DECEMBER 23, 1887.

A MOST INTERESTING CELEBRATION took place in Philadelphia on Dec. 12. The occasion was the one-hundredth anniversary of the birth of Thomas Hopkins Gallaudet, the pioneer of the movement for the instruction of the deaf in this country. A short biographical sketch of Gallaudet was read, and one of his poems was recited by four deaf girls in the sign-language. The address of the evening was delivered by Prof. A. Graham Bell of telephone fame, and well known for his researches into the heredity of deaf-mutism. Professor Bell gave an interesting history of the knowledge of deaf-mutism, pointing out how completely its nature was misunderstood until within very recent times. Not two centuries ago the legal status of a deaf-mute was like that of an idiot. The notion of his being capable of receiving education was ridiculed, and the only attempts to make them speak was by a church miracle. Three names in the eighteenth century stand out as the successful teachers of the deaf, — Heimcke, De l'Epée, and Braidwood. Gallaudet became interested in the deaf-mute by meeting the young daughter of his neighbor at Hartford, Dr. Cogswell. He succeeded in teaching her a little; and when, later, it was found out how many more were similarly afflicted, a meeting was called at Dr. Cogswell's house, and it was decided to send young Gallaudet to England to learn the methods of teaching, and introduce them into America. He arrived in England, and found that Braidwood had bound all his teachers under a heavy fine not to reveal his methods to any one. It was a money-making institution, and after long delays he saw that it was hopeless to stay in England. He then fortunately met the Abbé De l'Epée, who welcomed him to France with open arms, taught him all he had to teach, and sent with him one of his most talented pupils, Laurence Clerc, to spread the great gift to America. On their arrival they founded the institution at Hartford, which soon gave rise to others all over the land. The perseverance and self-sacrifice of Gallaudet were the means of bringing a life worth living to thousands of the deaf of America. The address was interpreted into the sign-language as rapidly as it was spoken, and was greatly appreciated by the many deaf persons in the audience. The two sons of Gallaudet, both of whom are engaged in continuing the work of their father, — one as the president of the deaf-mute college at Washington, the other as a pastor for the deaf, — were present, and made remarks suitable to the occasion.

THE DEATH HAS BEEN ANNOUNCED of Gustav Theodor Fechner, professor of experimental physics at the University of Leipzig. Fechner has been before the scientific world in many fields of activity, and for many years. He began his career as a physicist, and for many years devoted himself to experimental work, and edited a physical journal. But the chief work of his life was begun when nearly sixty years old. This was the work on psychophysics, — a field hitherto touched upon in only the most meagre way, and owing its scientific recognition as well as its systematic development to him. He here announced the psychophysical law, stating the relation between the intensity of the stimulus and that of the resulting sensation, and verified it with a large number of ingenious and laborious experiments. Around this central conception of Fechner's has sprung up a large literature, in part criticising his fundamental points, in part developing and adding to his work and his methods. Whatever the final outcome of the move-

ment, it will always owe its vitality and its scientific development to Fechner. This interest was maintained by Fechner until his death. Two more books on psychophysics appeared from his pen, and a large number of articles, the last of which were written only a few years ago. Fechner's mind was characterized by two streams of interest; the one leading him to exact science, the other to a somewhat imaginative speculation. He was deeply impressed with the poetic, the mystic side of nature, and struggled to make the world seem rational without losing any thing of grandeur or mystery. These two streams of thought come nearest to meeting in the second part of his psychophysics, but it is greatly to his credit that he succeeded so well in keeping science and speculation apart. Only once did he seriously confound the two, and that was in the somewhat subordinate part he played in 'the fourth-dimension experiments' of Zöllner. Besides his scientific works and his speculative ones, he was the author of a book of poems and a book of riddles. He died at the advanced age of eighty-six. He had been troubled for many years by a double cataract, and was prevented from doing much work by this disease.

THE WOMAN'S TEMPERANCE PUBLICATION ASSOCIATION of Chicago has just issued a little book by William T. Hornaday, entitled 'Free Rum on the Congo.' This book is an earnest appeal to Americans for the suppression of the liquor traffic in Africa, especially in the Kongo basin. As might be expected, the author ascribes the destructive influence of European civilization upon the natives of all countries almost solely to the influence of alcohol, and overlooks other important agents which nobody, however deep his sympathy with the unfortunate victims of European civilization may be, can remedy. The physical destruction of uncivilized races is brought about by diseases introduced by Europeans, among which alcoholism takes its place, although not by any means the most prominent one. But the mental deterioration of the natives is not less important. The cheap products of European manufacture, which are in every respect superior to those of native manufacture, make the native arts and industries decline rapidly, and vanish within a few years. As nothing new is given to the natives in place of their lost arts, their lost culture, they sink to a far lower stage than they occupied before the advent of the whites. It is at this moment that the missionary generally makes his appearance. It is only in rare instances that he succeeds in raising the natives to a higher standard. Generally the Christianity he introduces is nothing else than a new fetich instead of the old one. He is taught that agriculture is the only means of civilizing a nation, and applies this theory regardless of the character of his pupils and without effect. Thus the native falls into a state in which he requires European products, and has little to offer in exchange. He is not accustomed to work hard and steadily, and therefore the sole effect of his contact with the white man is the promotion of his laziness and of all his bad propensities. In these two facts lies the root of the destruction of uncivilized peoples. Alcoholism is only a small part of the evil influences threatening the natives, and the suppression of the liquor traffic will not go far to improve their condition. It is well known that the negroes throughout Africa, with the exception of a few tribes, were acquainted with alcoholic drinks before the advent of the whites. The Kaffres, the Balunda, the Waganda, brew beer and make palm-wine, which they drink in excessive quantities. But rum and gin are more dangerous, as they contain more alcohol; and a law prohibiting their importation would be a gain for the natives. But the Woman's Temperance Association, in endeavoring

to arouse an interest in the suppression of alcohol traffic in Africa, ought to know, that, even if its aims were reached, the negroes would be little better off. There is only one way to improve their state: it is to develop their arts and industries; to improve the methods of agriculture where such is practised, to further stock raising and trading where the negroes are stock raisers and traders. After this has been done, the missionary may be able to Christianize his pupils. The intelligent missionaries, who understand that an improvement of the material welfare of the natives must precede any teaching of religion, are not many. The author, whose aims are very praiseworthy, has not grasped the question of education of the natives. He overestimates one cause of their ruin, and underestimates their faculties. The spread of Mohammedanism shows that the native is well able to protect himself from alcohol, if his other energies are not destroyed by foreign influence. This shows that the principal problem is not the prohibition of alcohol, which of course is the chief aim of the Woman's Temperance Association, but the stimulation of the energies, and development of the faculties, of the natives.

THE GERMAN SYSTEM OF NORMAL SCHOOLS.¹

IN Germany schools have a social as well as an educational rank. They may in general be divided into lower, middle, and higher schools. The tuition, which is common to all, is graded, so that the poorer and lower social classes are driven into the lowest grade of schools. These are called *Volks*, or people's schools. In Prussia ninety-one per cent of all children attend them; in Bavaria, ninety-six per cent. Their course of study is rounded up and complete in itself. This school leads into no higher school. The length of its course of study is eight years,—from the age of six to that of fourteen. It is for this grade of schools that the German normal schools prepare, and have always prepared, teachers. The higher schools are taught by classically trained university men, even in the elementary grades.

German normal schools arose in the middle of the eighteenth century, and were established and maintained almost wholly from philanthropic motives. They educated pious young people for a business to which was attached neither competence nor worldly honor. Externally their growth was greatly stimulated by the rise of that great democratic wave which has swept through the world during the present century; furthermore, by that fear of an uneducated proletariat which arose with the French revolution; and, finally, by that high patriotism which saw in the education of the German people the hope of freeing Germany from the domination of Napoleon. Internally the normal schools received a new birth through the educational revival which arose with Rousseau and Pestalozzi.

But at the close of the Napoleonic wars, Germany relapsed into the old police state, and soon suffered the internal contradiction of a free intellectual development of the people in its schools, and the cast-iron rigidity of a bureaucratic and despotic system of government. This contradiction culminated in the revolution of 1848. A re-action followed, and the normal schools, which had grown numerous, were accused of being the main disseminators of revolutionary ideas. In 1854 there followed the three famous Prussian Regulations, which eliminated from the normal schools the spirit of Pestalozzi and modern development, and reduced them to medieval handmaids of the Church and a bureaucratic State. Other German powers followed the example of Prussia. Authority took the place of self-activity in the schoolroom, and German education sank from its high estate. This was the condition of education in Germany until the great day of German unity, which came at the close of the Franco-Prussian war. The oppressive Regulations were repealed, the spirit of progress and free development of mind returned, and Germany resumed her former place as the leader of educational advancement. The number of normal schools increased, until there were enough to supply all teachers needed for the people's schools. The number in 1882 in Prussia was one hundred and eleven, nine of which were for women, the rest for men, there being no co-education in German normal schools. Each

school has a director, a head teacher, four ordinary teachers, and one assistant. It is attended by about a hundred students, about two-thirds of whom board in the school. The board is very cheap, not exceeding a dollar a week. The State pays the deficit, if one occurs. I apprehend that the main reason for this close connection with the school is to be found in the tendency of the normal students to imitate the excessive beer-drinking and carousing so common among the students of the university. The employment of women as teachers in Germany is yet regarded as an experiment in many parts of the country, and occurs usually only in graded girls' schools. Director Leutz of Karlsruhe said to me, "So far, they give good satisfaction, for they are still young and fresh, but who knows what they will become when they get old and cross?"

The fact that Germany can supply all its *Volks* schools with graduate teachers from the normal schools, finds its explanation in these facts: 1. All students take a continuous course, and all graduate, as indeed they must before they can become teachers; 2. Nearly all graduates remain teachers, for a German rarely becomes that for which he was not specially educated; 3. Teaching is a profession in Germany, since none but trained persons are allowed permanently to teach in that country. The teacher is a civil officer, and holds his position with a life-tenure. I find by computation that the average length of service of Prussian teachers for the last fifty years is sixteen and nine-tenths years; so that, aside from the increase in the number of schools, but five and nine-tenths per cent of the whole number of teachers must be renewed yearly. Director Rein of Eisenach, in Sachsen-Weimar, and Director Leutz of Karlsruhe, in Baden, both assured me that not more than five per cent of the number of teachers in those states is renewed yearly. This makes it possible, with a reasonable number of normal schools, perhaps one for each hundred thousand inhabitants, to supply trained teachers for all schools. Every year, however, in Illinois, over twenty per cent of all teachers are beginners. At this rate, to supply our Illinois schools with trained teachers, it would take one hundred and forty-two normal schools, each having one hundred students, a three-years' course, and graduating thirty-three students annually. We have, in reality, two normal schools, which graduate from twenty-five to forty students each year.

German normal schools are administered by the state educational minister or commissioner, a provincial school commission, and by the director.

The same difficulties which have beset us, concerning the proper preparation of candidates for the normal schools, exist in Germany. Most of their candidates come naturally from the *Volks* or people's schools; but, as we have seen, their course of study is strictly elementary, and closes when the student is at the age of fourteen. The common rule is to require three years of preparation before entering the normal school. This preparation is obtained in any one of three ways: 1. Privately (this happens in villages where only the *Volks* school is found); 2. In the advanced grades of middle and higher schools; 3. In special preparatory schools. Of this kind, Prussia has thirty, whereas each normal school of Saxony has its own preparatory school. The pupils are here taken at fourteen direct from the *Volks* school, and graduated six years later. The course of study in the preparatory schools is purely academic, and consists of (1) religion, (2) German (reading, grammar, etc.), (3) mathematics (arithmetic, algebra, geometry), (4) history, (5) geography, (6) natural science, (7) writing, (8) drawing, (9) singing, (10) violin, (11) piano, (12) harmony, (13) gymnastics.

That every normal school must have a model and training school has long since been established by law in Germany, and is no longer a question of debate. As the late Director Kehr, of the Halberstadt Normal School, said, "a normal school without a training-school would be like a swimming-school without water." The only feature to which I wish to call your attention is the fact that in Prussia each training-school has a country or district school department, i.e., a model of a school taught by one teacher, so that the students have a complete picture of a village ungraded school. I do not dwell upon the subject of the training-school, for I believe that this country has now become pretty thoroughly converted to the idea that the training-school is a necessary part of any thoroughly equipped normal school. Some of you will remember, how-

¹ Read at the National Teachers' Association, in Chicago, July, 1887.