

and that the compactness of a table of centiles is no hindrance to their wider use. I regret to be unable to learn the proportion of the competitors who were farmers, butchers, or non-experts. It would be well in future competitions to have a line on the cards for "occupation." Certainly many non-experts competed, like those clerks and others who have no expert knowledge of horses, but who bet on races, guided by newspapers, friends, and their own fancies.

FRANCIS GALTON.

Ketene.

WHILE engaged in a research on the polymerisation of unsaturated compounds, we were led to try the action of a strongly heated platinum wire on various organic substances. It is unnecessary at this stage to discuss our general results, and we will therefore deal at once with the action of the wire on acetic anhydride. This substance when treated with the hot wire yielded a compound boiling about -65° and freezing about -130° , which on standing at ordinary temperatures condensed fairly rapidly, yielding a brownish-yellow oil which, like the gas, has an extremely pungent smell. We have not yet succeeded in obtaining the new body in a completely pure state, but as our work has been interrupted for some time, we venture to give the following preliminary data.

On exploding one volume of the gas with excess of oxygen, there was a contraction of 1.01 volumes, and 1.85 volumes of carbon dioxide were formed, while 1.86 volumes of oxygen had disappeared. The corresponding numbers for the reaction $\text{CH}_2 : \text{CO} + 2\text{O}_2 = 2\text{CO}_2 + \text{H}_2\text{O}$ are 1 : 1 : 2 : 2.

Another sample gave a density of 39.9 ($\text{H}_2=2$), while that calculated for $\text{CH}_2 : \text{CO}$ is 42. This sample was, however, far from pure.

The gas is absorbed by all the ordinary reagents, including water. It combines with bromine, and appears to give a crystalline compound with bisulphites. It chars when treated with phosphorus pentoxide or concentrated sulphuric acid. These two reagents themselves produce traces of the gas when they are allowed to act on acetic anhydride. We would add that we have also obtained the substance from acetone, and it seems probable that it can be obtained by our method from all substances containing the group $-\text{CH}_2-\text{CO}-$.

We would suggest that the body is the parent substance of Staudinger's ketenes. We hope to be able to publish a fuller communication shortly.

N. T. M. WILSMORE.
A. W. STEWART.

University College, London, March 25.

Technical Terminology.

THE writer on engineering terms in NATURE of March 21 (p. 490) says that a single word is required to denote a central electric generating station.

Perhaps *megadyne* would be acceptable, signifying "great power," and suggestive of the dynamo equipment of the station. As a convenient abbreviation, *mega* would readily enter into common use.

J. T. RICHARDS.
67 Thurlleigh Road, Balham, S.W., March 23.

HIGHER EDUCATION IN THE UNITED STATES.

THE most recent report issued from the United States Bureau of Education at Washington gives detailed information respecting recent developments of the various grades of education in the States down to June 30, 1904, and in it the Commissioner of Education gives a prominent place to the work of universities and colleges. The statistics now provided make it possible to supplement the article published in these columns (vol. lxxviii., p. 25) dealing with university education in the United States, and to give some indication of the progress which has been made in American institutions of higher education during recent years.

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There has been, in the first place, a large increase in the number of students attending universities and colleges in the United States. Whereas in the year 1899-1900 the total number of men students was, roughly, 61,800, and of women students 25,300, the numbers in 1903-4 had become, for men, nearly 72,000, and for women nearly 31,000.

The number of professors and instructors has increased in a similar manner. In 1899-1900 the number of such teachers in institutions for men and for both sexes was 12,664 men and 1816 women; in 1903-4 these numbers had become 15,342 men and 2272 women. In institutions for women alone the increase is not so decided. The number of men teaching in these institutions was in the former year 697, and in 1903-4 only 631. The number of women, however, shows a marked increase from 1744 to 1834.

It is interesting and instructive, too, to study the rise and fall in the popularity of the various subjects taken up by students. At the two periods under comparison there were some remarkable differences. In 1899-1900 the number of students studying classics and other subjects of general culture (as the report calls it) was roughly 57,000, but in 1903-4 the number had reached 65,000. In the earlier year the number of students in classes of pure or applied science was well on towards 26,000; in 1903-4 this number had increased to 32,000. The relative popularities of humanistic and practical studies may be said to have undergone little change at institutions of the rank under consideration. But in this connection it must be remembered that at the great technological institutions, which are not included in these statistics, large numbers of men are engaged entirely in studying branches of applied science.

The total value of property possessed by the institutions for higher education in the United States amounted in 1899-1900 to about 72,120,000*l.*, and in 1903-4 this large sum had increased to 93,043,000*l.* The endowment funds in the former year were valued at 33,240,000*l.*, while in the latter year this provision for future contingencies had grown to 41,313,000*l.*

The value of gifts and bequests received by institutions for higher education during 1899-1900 was 2,399,000*l.*; in 1903-4 the amount had increased to 2,740,000*l.*; and last year as much as 5,000,000*l.* was raised in this way. Twenty-five institutions in the former year received from private donors gifts of as much as 20,000*l.*, and in 1903-4 as many as twenty-nine institutions were equally fortunate.

For the first of the years with which we are concerned in this comparison, the total income, excluding benefactions, amounted to 5,712,000*l.*, of which about 2,234,000*l.* was received in the form of tuition and other fees. In 1903-4 the total income had reached 8,066,000*l.* In connection with this sum, the Commissioner for Education remarks:—"It is a well-known fact that the income derived from fees received from students forms only about one-third of the total income, the remainder necessary to meet the expenses of the institutions being derived from endowment funds, State aid, and miscellaneous sources."

In 1903-4 the State and municipal aid to higher education amounted to 1,984,600*l.*, as compared with 893,000*l.* in 1899-1900.

It is thus seen that the striking disparity between public and private efforts in behalf of higher education in the United States and Great Britain, pointed out in the article to which reference has already been made, has, in the interval of four years with which we are here dealing, become more accentuated; and, instead of having made up leeway, we appear to have fallen even further behind.