

sion you will infer that our molecular theories of magnetism are yet in a very unsatisfactory state in spite of the light which Langevin's ideas have thrown upon the subject, and that experiments upon the magnetic properties of bodies have not yet contributed in a very striking manner to our knowledge of molecular structure.

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### ENROLLMENT IN SCIENCE IN THE HIGH SCHOOLS

In the issue of *SCIENCE* for February 12, 1915 (Vol. XLI., pp. 232-235), I called attention to the significance of the data given by the Commissioner of Education in regard to the enrollment in science studies in the high schools of the United States. The appearance of additional statistics for the five-year period 1910-1914 in the 1916 Report makes it possible to review the situation in the light of the new figures.

The table on page 489 of the Report of the Commissioner of Education for 1916, Vol. II., gives a summary of the enrollment in various subjects of the high-school curriculum in 1910 and 1915, both in terms of the numbers enrolled and in the percentage of the total enrollment. It is rather startling to find that in this five-year period there has been a drop of 44 per cent. in the enrollment in botany, stated in terms of the per cent. of the total enrollment, and one of 51.3 per cent. in zoology. The decline in botany has been from 16.34 per cent. to 7.19 per cent. and in zoology from 7.88 per cent. to 4.04 per cent. Physics has nearly held its own, changing from 14.79 per cent. to 14.28 per cent. while chemistry has made a slight gain, from 7.13 per cent. to 7.63 per cent. The other old-line sciences have all dropped off, physiology and physical geography quite heavily. Nor is the gain in the newer sciences enough to counterbalance the loss in the old. The percentage enrollment in agriculture has increased from 4.55 per cent. to 6.92 per cent., in domestic science from 4.14 per cent. to 12.69 per cent. The total per-

centage enrolled in science in 1909-1910 was 91.99 per cent., in 1914-1915 86.16 per cent., a drop of 5.83 per cent.

It seems strange that in an age when applied science is increasingly evident on every hand in the commonplace appliances of home, farm, factory and office that there should be any decline in the relative interest in science

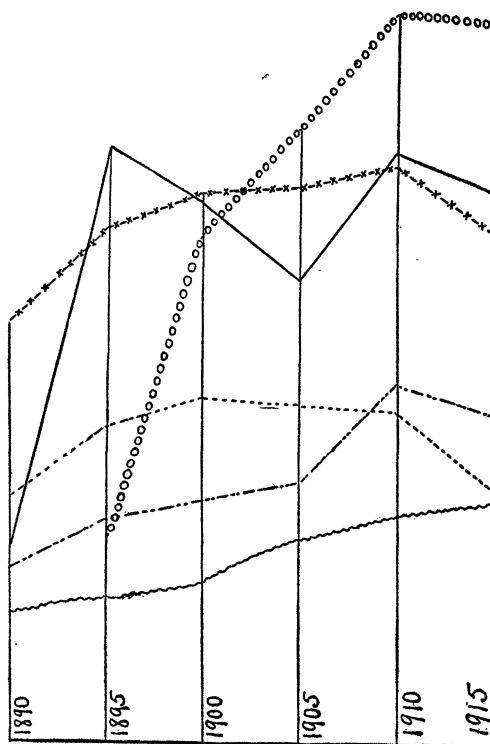


FIG. 1. Showing percentage of total enrollment in the high schools of the United States pursuing certain groups of studies, as follows: Classics, -----; English, oooooo; History — · — · — · —; Mathematics, -x-x-x-; Modern Language ~~~~~; Science, —————. 1 mm. = 1.2 per cent.

in the high schools. It is fairly evident that the high-school science course is in some way out of joint with the times. This decline in the science enrollment is not so alarming, however, when compared with changes in the other groups of subjects. The modern language group is the only one of the traditional subjects that shows an increase, that a small one of 1.5 per cent. The classics drop 11.04

per cent., mathematics 10.37 per cent., history 4.23 per cent., English 1.96 per cent. These changes are graphically presented in Fig. 1 and at the same time compared with the changes of the two preceding decades.

In general the interpretation put upon the data in the previous article seems still to maintain, namely (1) that the decline in the percentage of students in the old-line subjects is largely due to the introduction of many new subjects like manual training, domestic science, biology, agriculture, drawing, etc., most of which appear in the tabulation for the first time in the 1916 Report; and (2) that the science group is holding its own reasonably well. This is especially true of physics and chemistry which are usually offered in the third and fourth years of the course. Since the high-school enrollment is increasing very rapidly, 45.1 per cent. 1909-1914, while the percentage of pupils in the upper grades increases slowly (.49 per cent. for the third grade, 1.8 per cent. for fourth grade in the same five years), there is an increasingly large number of students that get no chance at physics and chemistry.

The data given for botany and zoology are indicative that another decade will see these biological subjects eliminated from the high-school curriculum. I am not sure that such a conclusion is justified, however; they may merely appear under a new caption. The data given for the whole United States may obscure what is going on locally and progress is usually local at first. Changes of opposite character may quite effectually obliterate each other when the data are massed. Thus the interest in French is largely concentrated in the New England States. More than 43 per cent. of the high-school pupils of Maine and New Hampshire are enrolled in French. The average for the New England States is 37.7 per cent.; for the North Central States, 3.07 per cent. The percentage enrollment in French has declined, though the enrollment in the modern languages has increased, largely due to the increase in Spanish in the Western States, the percentage of enrollment in it be-

ing 10.45 per cent. there, as compared with 0.76 per cent. in the North Central States.

The largest decline in botany and zoology has been in the North Atlantic States, where the percentage of enrollment has dropped in the five-year period from 16.28 per cent. to 6.46 per cent. in the former subject and in the latter from 9.64 per cent. to 3.18 per cent. But simultaneously the enrollment in biology has risen from 2.35 per cent. to 14.38 per cent. The percentage of enrollment in botany has changed in the North Central States from 17.72 per cent. to 12.79 per cent. and in zoology from 5.57 per cent. to 3.49 per cent.; but at the same time the enrollment in biology has risen from 0.13 per cent. to 1.64 per cent. and in agriculture from 4.97 per cent. to 9.78 per cent.

Botany and zoology are apparently giving way to related subjects that either appeal to school authorities as more effective educationally or to the public as more closely allied to everyday affairs. In view of the fact, now generally recognized, that knowledge and principles gained in one field of study do not carry over even into an adjacent field readily, it must be considered good policy in science instruction to deal with subject matter that is as nearly identical as possible with that which pupils will handle in their major life interests.

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#### SCIENTIFIC EVENTS

##### PROFESSOR ROBERTSON'S GIFT TO THE UNIVERSITY OF CALIFORNIA

DR. T. BRAILSFORD ROBERTSON, professor of biochemistry and pharmacology in the University of California, has executed a deed donating to the University of California all his patent rights in the growth-controlling substance, "Tethelin," which he has succeeded in isolating from the anterior lobe of the pituitary body, and which has been employed to accelerate repair in slowly healing wounds. All profits resulting from this discovery are to constitute an endowment, the income to be applied to medical research.