

11-hydroxylation by the trophic hormone. Saba's results obtained in collaboration with Hechter suggest that corticotrophin influences the spatial relationships of enzymes involved in the biosynthesis of adrenocortical steroids. More recent work by others has revealed an effect of corticotrophin on enzyme systems which effects the reduction of triphospho-

pyridine nucleotide. The requirement for reduced triphosphopyridine nucleotide for steroid hydroxylation has already been referred to. If this is an important effect of corticotrophin it is difficult to relate it to the specificity of action of this hormone.

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## EDUCATION IN THE UNITED STATES (1957-58)

**E**DUCATION in the United States of America is based on three fundamental concepts: that the primary responsibility for public education rests with the States; that every person has an equal right to educational opportunities; and that educated citizens are essential to freedom and human welfare. Working within these concepts during 1957-58 the United States made further progress towards its goal of improving education for all\*.

Evidence of progress is found in the increasing educational attainment of the population. The number of school years completed by the average adult 25 years of age and over increased from 9.3 in 1950 to 10.6 years in 1957. The group 25-29 years had completed 12.3 years of schooling, while the group older than 65 had completed only 8.3 years.

Although education is a State responsibility, no State administers its schools directly. Laws have been enacted in each State dividing the territory of the State into local school administrative units, commonly termed school districts. The powers of local district school boards to establish and maintain schools are prescribed by State law, but permit exercise of local initiative in exceeding minimum educational standards required by the State. Each State has its own department of education, which exercises controls and provides specialized services to assist local school districts in conducting the State programme of education.

At the beginning of the school year there were 1,152,500 instruction rooms in full-time public elementary and secondary schools; an additional 142,300 rooms were needed to relieve over-crowding and to replace unsatisfactory facilities. About 70,500 instruction rooms were scheduled to be built during the year. About 61,000 rooms will be needed to accommodate next year's enrolment increase and to replace rooms that will probably be abandoned.

Almost one-third of all pupils enrolled in the public elementary and secondary schools are transported to and from school at public expense. During 1955-56, more than 10 million pupils were transported. In most States pupils must live 1½ miles or more from the school to be eligible for transportation for which the State helps to pay the cost.

Institutions of higher education classified by type of support and control are of two general types—publicly controlled and privately controlled. One-third of the approximately 1,900 higher institutions are publicly controlled and supported by public or government agencies; two-thirds are privately controlled and supported by individuals or ecclesiastic, philanthropic and other groups. The State exercises little control over institutions of higher educa-

tion, even those supported by public funds, and consequently both types of institution operate with a high degree of autonomy.

In 1957-58 expenditures for education in public elementary and secondary schools and in higher institutions totalled 20,000 million dollars, which was 5.5 per cent of the 1957 total national income of 358,000 million dollars. Funds to cover expenditure in public schools were provided by Federal, State and local governments.

For the fiscal year 1958 the Federal Government appropriated approximately 2,000 million dollars for educational purposes. The total included funds administered by the Office of Education and was distributed as follows: Office of Education, 7,000,000 dollars; vocational education, 40,888,412 dollars; higher education, 5,051,000 dollars; school construction and maintenance, 225,650,000 dollars; and library services, 5,000,000 dollars.

Since the States have primary responsibility for public education in the elementary and secondary schools they provide funds and authorize local school districts to provide local tax-funds for public schools. In the 1957-58 school year it is estimated that of the total revenue for public schools the Federal Government provided 4 per cent; the States, 41 per cent; and local districts, 55 per cent. In recent years the percentage from Federal and States funds has been increasing slightly.

As much as 93 per cent of local educational revenue is obtained from property taxes. Local communities use the property tax to secure funds for current operating expenses and for school construction. Some local districts also levy non-property taxes for schools, including local *per capita* taxes and taxes on wages, sales and amusements. Non-property taxes for schools produce 7 per cent of local revenue.

Total expenditure per pupil in 1957-58 averaged 431 dollars, an increase of about 7 per cent over the amount in 1955-56.

Tax revenues supply most of the funds for public institutions; private donations, student tuition and endowment supply most of the funds for private institutions. The 1957 budgets for both private and public institutions for educational and general expenditures, excluding auxiliary services, student aid and plant expansion, totalled 3,200 million dollars. Of this, students paid 950 million dollars as tuition; earnings on endowment provided 150 million dollars; private gifts, 250 million dollars.

The organization of public schools is determined by State and local authorities, but generally the basic 12-year programme is organized as an 8-year elementary and a 4-year secondary programme or a 6-year elementary and a 6-year secondary programme. Typically a 6-year secondary programme is divided into a 3-year junior and a 3-year senior high school. The most common type of school is one

\* Progress of Public Education in the U.S.A., 1957-58. (Washington, D.C.: Gov. Printing Office; available also from H.M. Stationery Office, London.)

attended by almost all children of school age in the community, regardless of social or economic status, sex or vocational aim. On all levels schools vary greatly in size, from one-room rural schools to large urban schools enrolling several thousand students. Improvement of the school district organization in sparsely populated regions has resulted in a continued decrease in the number of small high-schools.

All States provide public schools and permit students between the ages of 6 and 20 years to attend. Most States have enacted compulsory attendance laws for certain age-groups. The compulsory attendance ages range from 6 to 18 years, but a majority of the States require attendance between the ages of 7 and 17 years. Of the total population of persons between 6 and 17 years old in October 1957, 96.5 per cent were enrolled in school. At that time 93 per cent of all school-age children, generally defined as those between 5 and 17 years old, inclusive, were enrolled. In elementary and secondary schools the proportion of boys and girls was about the same but in higher-education institutions men made up about two-thirds of the student body and women one-third.

School enrolments increased for the thirteenth consecutive year. In 1957-58, 43,135,000 persons, or about one out of every four in the population, were attending public or private schools and colleges; an increase of more than 4 per cent over 1956-57.

The latest available data indicate that about one-half of the high-school graduates now go to college, about 42 per cent full time and 8 per cent part time. Attendance of students at institutions of higher education is altogether voluntary. Assuming that they meet admission requirements, students are free to choose the type of institution they attend—public or private, liberal arts or technical, 2-year or 4-year, and to pursue any curriculum or prepare for any profession to the extent of their abilities. A student in an institution may of his own volition drop out

altogether or transfer to another institution. In the autumn of 1957, colleges and universities enrolled more than 3 million students, an increase of 4 per cent over the autumn 1956 enrolment, and a 43 per cent increase over the 1952 autumn enrolment. The number of freshmen entering college in the autumn of 1957 represented slightly more than 30 per cent of persons in the country who were 17 years of age in 1956. About 58 per cent of the students enrolled were in public institutions. Enrolment in public institutions is increasing more rapidly than in private. About 800,000 of the students attending full time lived in dormitories provided by the institutions.

The degree-granting colleges conferred a total of 411,000 degrees in 1957-58, 8.3 per cent more than in 1956-57. Of the total conferred, 82.8 per cent were bachelor's, 15.1 were master's and 2.1 were doctor's degrees. The average cost of a year in college was between 1,500 and 2,000 dollars, and the median award in scholarship aid was less than 300 dollars.

In 1957-58 between 30 and 35 million adults participated in adult education programmes sponsored by industry, labour unions, the Armed Services, farm organizations, and other groups. In carrying out their programme, these groups had the co-operation of public libraries, public school systems, higher institutions, television systems and Government agencies.

Extensive research is carried on by public and private agencies such as colleges and universities, State departments of education, and various philanthropic groups. Their research is directed toward solving some of the problems facing education; for example, it includes further investigation of the learning process and the character and extent of individual differences. State departments and local school systems direct their research primarily to solving local problems, and colleges and universities direct theirs to broader problems in education.

## THE PHYSICAL SOCIETY, 1958-59

THE annual general meeting of the Physical Society was held on May 21 at the Royal Institution, London, and immediately following the meeting Mr. J. A. Ratcliffe delivered his presidential address entitled "Recent Trends in the Theory of the Ionosphere". The report of the council of the Society and the accounts and balance sheet for 1958 were adopted at the meeting and the composition of the new council to hold office for the session 1959-60 was announced.

The income of the Society during 1958 exceeded expenditure by £4,581 and was mainly due to the increase in price of the Society's publications when sold to the general public which the council authorized in 1957. Notwithstanding the rise in price, sales have increased. The membership rose from 2,069 to 2,136, but the increase was entirely in the student membership grade. The forty-second annual exhibition of scientific instruments and apparatus was held during March 24-27 in the two halls of the Royal Horticultural Society. The size of the exhibition and attendance were similar to those of the previous year. The sales of the exhibition handbook and the receipts from exhibitors resulted in a satisfactory surplus of

£5,905, of which £4,000 was transferred to the exhibition contingency fund and the remainder to the general income and expenditure account.

The council's report refers briefly to the activities of the Society during the year and in particular to the conferences of two or three days duration which were held on various subjects in Cambridge, Durham, Malvern and Swansea. The attendances were usually between 200 and 250, of which approximately half on the average were members of the Society. A few research students and others were financially assisted to attend these conferences by means of a grant allotted to the Society by the Royal Society. The decision to recombine the two sections of the Society's *Proceedings* was put into effect during 1958 and the volume of work published (208 original articles, 74 research notes and 21 letters to the editor) was substantially the same as in 1957. Vol. 21 of the "Reports on Progress in Physics", which was published during the summer, contained nine articles, and these articles were also available for purchase separately.

The informal discussions with the Institute of Physics which were begun in 1957 to consider the