

delivered at Lehigh University on October 4 by Prof. Hans Zinsser and entitled "None of my Business: or Thoughts of a Biologist on Education". The address is printed in *School and Society* of November 25. The old problem of the relative cultural values of science and the traditional humanities is merged at the present day in another: how to determine the limits of the non-specialist and non-vocational parts of both, for a cultivated man of to-day should possess as clear a comprehension of the fundamental laws of science as he does of classical culture and of the language and literature of his own country. The great freedom of choice at present allowed in the earlier college years in the United States needs to be curtailed and there should be a far more rigid insistence than at present on a substantial minimum of mathematics distributed between those years and the high school, and general courses in the history of science, in physics, chemistry and biology should be combined with so much of the humanities as is indispensable for intelligent appraisal of the civilisation of our time.

THE annual report of the University of Bristol records a small increase in the number of students and several interesting developments in the course of the year 1932-33. A link with New Zealand was established by the foundation of a Hiatt Baker memorial research scholarship of £200 a year tenable for two or three years by a graduate from New Zealand. At a celebration of the centenary of the foundation of the medical school, the history of which by Dr. G. Parker was published without charge to the University by Messrs. John Wright and Sons, Lord Dawson of Penn paid a tribute to the work of Prof. Fawcett in the faculty of medicine over a period of nearly forty years. In co-operation with the City Council, the University established a department of preventive medicine which undertakes all the bacteriological, pathological and chemical examinations and research required from time to time by the corporation or its medical officer of health, who is ex-officio professor of preventive medicine. A faculty of law was established with the help of contributions from local solicitors and others. The university halls of residence were all full throughout the year.

THE dispersal of German scholars frowned on in their own land for reasons connected with their political affiliation or racial origin has led to the establishment by the Institute of International Education in New York of a graduate faculty in political and social science comprising Profs. Lederer, Brandt, Speier, Wunderlich and von Hornhostel of Berlin, Heimann of Hamburg, Feiler of Königsberg, Colm and Kantorowicz of Kiel and Wertheimer of Frankfurt. It is hoped that in the near future this faculty will be matched with others so as to form a general "university in exile", a rallying point for distinguished scholars displaced by political intolerance in Europe, and a medium for cross-fertilisation of American and European scholarship. For the American student it would perform, by reason of its reproducing the spirit and method of German educational organisation, much the same service as he secured from one or two years of study in a German university. The scheme is described in the Institute's News Bulletin and a summary of it appears in *School and Society* of December 16.

Science News a Century Ago

Insects in the Heads of Mummies

The Rev. F. W. Hope read a paper on January 27, 1834, before the Entomological Society (*J. Proc.*) in which he described several species of insects found in the heads of Egyptian mummies, some of which had been extracted from the head of a female mummy with plaited hair. This was exhibited at the meeting by Mr. Wilkinson, the celebrated Egyptian traveller, by whom it was brought from Thebes. In the head of one mummy was found, it was said, a considerable quantity of the pupae of dipterous insects . . . and from their appearance Mr. Hope was led to remark that the process of embalming could not possibly have been a rapid one. Mr. Pettigrew observed that in some mummies, however, no insects were discovered, as in the one recently opened at the College of Surgeons (see *NATURE*, Jan. 13, p. 74).

Currency Problems in the United States

Throughout the year, the United States continued to be agitated by the contest which had begun in the preceding year as to the legality of the conduct of the President in withdrawing the public deposits from the national banks. Meanwhile, the importation of gold into the United States went on to an unprecedented extent. The increase of specie between the beginning of January 1833 up to June 11, 1834, exceeded 20,000,000 dollars, and the excess of specie imported during the next nineteen days, above what was exported during the same period, came to about 2,000,000 dollars. The result of this crisis was that a metallic currency was established for paper money ("Annual Register", 1834).

Drought in England

On the last day of January 1834 a drought began in England and Wales, and from that date until July 4 the rainfall was very limited. At Chiswick the total fall for the whole period amounted to only 4.7 inches, and over England and Wales as a whole the rainfall in the months of February to May inclusive was only 58 per cent of the normal. In the early months high temperatures following a wet January caused the vegetation to be very forward, but a series of north-easterly winds and severe frosts in April brought disaster to the fruit crops. July was rainy and thundery, but the drought returned in September and was severe in October, November and December. October 1834 appears to have been the driest month of that name in England and Wales between 1810 and 1933 inclusive.

Lyell's "Principles of Geology"

In January 1834 the *Gentleman's Magazine* printed the following notice of vol. 3 of Lyell's "Principles of Geology":—

"Those who have read the former volumes of Mr. Lyell will have recognised the great alteration and improvement which has taken place in the theory of Geology. The older geologists were more fitted for the island of Laputa than for a Philosophical Society, and even some of the latter were not far behind in pushing forward their crude fragments of discovery. With them it was assumed that enormous changes and sudden and violent catastrophes, confounding and dislocating all the

globe, were necessary to account for its present aspect. Now Mr. Lyell's reasoning goes to the destruction of this ingenious but visionary fabric. He considers that the operations *now* going on in the great workshop of nature are sufficient to show how the others that have preceded them have also moved. The changes in animated nature he refers to the circumstances in which the animals are placed. Some animals are extinct that were existing a few years ago; others are changed in their nature, habits and climate; thus, though unmarked except by the thoughtful eye of science, are changes now taking place very similar to those which have so long attracted the wonder and employed the attention of the sons of wisdom. The superentaceous groups form the subject of examination in the third volume. Mr. Lyell's account of fossil shells is more extensive and important than ever was given before."

The Post Office

"In my opinion," wrote Lord Brougham, "the teachers of the age of George III covered it with still greater glory than it drew from the statesmen and warriors that ruled its affairs." Brougham himself was one of the first public men to concern himself with national education, and he was the founder of the Society for the Diffusion of Useful Knowledge. To this Society was due the publication a century ago of the *Penny Magazine* and the "Penny Encyclopædia", to which many eminent men of science contributed. The *Penny Magazine* was issued weekly with a monthly supplement and the supplement for January 1834 was devoted to "The History and Present State of the Post Office". "In the advanced state of civilisation to which we have now attained in this country," the article says, "we possess many advantages of the highest importance which are indeed essential to our daily comfort, but which, presenting themselves with unflinching regularity, pass without observance and almost without our being conscious of enjoying them." Among the principal of them, it was said, may be reckoned an efficient and well-regulated system for the transmission of letters not only in Great Britain but also all over the world. For inland letters the charges were 4d. for 15 miles, 8d. for 50 miles, 10d. for 120 miles and, not exceeding 300 miles, 1s. 1d. When a letter weighed an ounce it was charged at four times the rate of a single letter. It cost 3d. to send a letter from Holyhead to Dublin and 6d. from England to the Isle of Man. Charges for overseas letters ranged from 1s. 2d. to France, to 2s. 2d. to America, 2s. 10d. to Gibraltar, 3s. 2d. to the Mediterranean and up to 3s. 6d. to Brazil. Peers and members of parliament could frank ten letters daily. The revenue of the Post Office, it was stated, amounted to £97,365 in 1754; £952,893 in 1804 and £1,457,132 in 1832. The number of persons employed in the post offices of the country in 1829 was 4,905.

Richard Lemon Lander

Richard Lemon Lander, the African explorer, died in Fernando Po on February 2 or 7, 1834. There is some doubt as to the actual date, as the accounts vary slightly in detail. He was born in 1804 and even as a youth travelled widely, being in the West Indies when only thirteen and he crossed Cape Colony as the servant of Major Colebrook, a commissioner of inquiry, in 1823. With Clapperton, Lander went to West Africa and he brought home

the news of Clapperton's death. He published the records of the expedition on his return to England. In 1830 Lander left England in charge of another expedition to the Niger. On his return in 1831, he was awarded the first Gold Medal of the then recently formed Royal Geographical Society of London. In 1832 a group of Liverpool merchants sent Lander on a new expedition to open up trade in the Niger basin. While on this expedition Lander was wounded in an encounter with the natives of the Brass River region and returned to Fernando Po, where he died.

Societies and Academies

LONDON

Royal Society, January 18. B. F. J. SCHONLAND and H. COLLENS: Progressive lightning. Eleven lightning flashes, comprising fifty separate strokes from two separate thunderstorms, have been photographed with a rotating lens camera based upon the design of C. V. Boys. The speed was fast enough to permit the study of the propagation of the discharge. The majority of the strokes were double and consisted of a dart-like downward-moving leader stroke, followed immediately upon arrival at the ground by a more intense flame-like upward-moving main stroke. The mean velocity of the leader strokes was 1.1×10^9 cm./sec. along the tortuous track in two dimensions and 7.0×10^8 cm./sec. in the vertical direction. The dart was less than 54 metres long. Corresponding mean velocities for the main strokes were 6.0×10^8 cm./sec. and 3.8×10^8 cm./sec. The leader strokes are identifiable with electron avalanches and the main strokes with thermally ionised channels. The cloud base was negative and the earth positive.

A. O. RANKINE: A simple method of demonstrating the paramagnetism and diamagnetism of substances in magnetic fields of low intensity. The instrument described is the result of an attempt to construct a magnetic gradiometer capable of measuring small distortions of the earth's magnetic field in the same way that the Eötvös torsion balance measures non-uniformities of gravity. Although this purpose has not yet been achieved, the first model of the instrument has revealed itself as a means of demonstrating the paramagnetism or diamagnetism of substances of small susceptibility. Moreover, the magnetising fields employed are much smaller than has hitherto been customary, being of the order of 50 gauss or less. The system used also provides a basis for the construction of a new form of very sensitive galvanometer.

C. W. GILBERT: The production of showers by cosmic radiation. Experiments made with triple coincidence counters showed that the frequency of showers produced in lead by the passage of cosmic radiation is proportional to the general cosmic radiation. The transition curves for air to lead were obtained at 3,500 m., and it was found that there the energy of the shower particles was greater than at sea-level. To explain the curves obtained, three types of radiation are needed, a primary radiation, a shower-producing radiation and the shower particles.

PARIS

Academy of Sciences, December 18 (*C.R.*, 197, 1545-1704). The president announced the death of Georges Friedel, *Correspondant* for the Section of Mineralogy.

G. PERRIER: The fifth general meeting of the Inter-