

and now, after General Woods, Colonel Gorgas, Guiteras, Finlay, and others took the situation firmly in hand, and organised a thoroughly efficient sanitary administration and a special raid upon the breeding places of the *Stegomyia*, the death-rate for Cuba has come down to between 11-17 pro mille. In 1907, only one case of yellow fever was reported in Havana."

Panama, New Orleans, and every other place treated in a like manner have given similar results, and certainly no sane individual will be found who, after reading "Mosquito or Man?" will deny that the mosquito is the only transmitter of yellow fever, and the remarkable results that follow its destruction.

Equally remarkable are the results that follow the extermination of anophelines for malaria. It was computed that Ismailia (p. 65), already mentioned, in 1886 had every inhabitant infected. Ross began his anti-malarial campaign there in 1901; by 1904 the cases were diminishing fast, until in 1905, 1906, 1907, and 1908, there were no new cases at all, indicating that the disease had been entirely stamped out. One would like to multiply further examples, but space forbids; those desiring more must read the book for themselves. There is little to criticise adversely in the work. Of omissions one might notice what was the first anti-malarial and yellow-fever campaign in the West Indies, namely, that conducted on the Morne and Vigie in St. Lucia in the year 1901, and also the pioneer work done on the destruction of mosquitoes for filariasis in Barbados.

Of errors, on p. 128, in the sentence "then after a latent period of three days the *Stegomyia*," &c.—should manifestly read "thirteen" days. On p. 133, "Man suffering from yellow fever after the fifth day is the reservoir" should read "Man suffering from yellow fever on the second or third day or before the fifth is the reservoir."

The book is clearly and ably written, is most interesting to read, is nicely illustrated by beautiful photographs, and we cannot do anything but praise the author for its production.

INDUSTRIAL EDUCATION.

TECHNICAL education may be regarded as falling naturally into two main divisions, (1) the education of the higher ranks of those engaged in industrial work, and (2) the education of the rank and file. From time to time one or other of these divisions occupies the more prominent place in the public interest. Recently, probably as a result of the discussions following the publication of the reports of the Poor Law Commission, special prominence has been given in the Press and elsewhere to the problem of the industrial education of those who will become in the near future the skilled workmen, artisans, and craftsmen of this country. Two recent attempts to influence public opinion in this matter may be here briefly recorded. Probably the more useful of the two is an attempt to organise a National Industrial Education League, the main object of which, in the language of its promoters, is "to make elementary education go hand in hand with industrial training, and to stop the criminal waste of the nation's best asset by giving our boys, before leaving school, a sound elementary industrial training." This proposal "has already received the approval of fifty-seven trades' councils, and of the representatives of 3,000,000 of industrial workers." In addition, promises of support have been received from many large employers of labour, distinguished educationists, and well known public men. Special stress is laid upon the fact that, "while the present system of technical education has benefitted many, it has left uncared for, and can never reach, the bulk

of the children who are destined to become industrial workers."

The second recent noteworthy attempt to arrive at some definite agreement in the matter was a conference held on Friday, December 3, at the Mansion House, at the invitation of the Lord Mayor, to consider (1) the development of industrial training in both elementary and trade schools, and (2) the organisation of facilities for bringing boys and girls who are leaving the public elementary schools into better touch with the openings that exist in the industrial and commercial world. The conference was attended by a number of representatives of the London County Council Education Committee, many large employers of labour, and delegates from trades unions. It is probable that the London County Council, at whose suggestion the conference was called, will not profit much by the deliberations of the conference. As no definite resolutions were submitted for discussion, there was a tendency to neglect general principles and treat side-issues only. Running throughout most of the speeches, however, was a belief in the impossibility of reviving the old system of apprenticeship and the consequent necessity for some form of educational work to give the necessary industrial training formerly supplied by the apprenticeship system.

Interest in industrial education is now extending to the political parties. Thus the National Union of Conservative and Constitutional Associations, at its recent annual meeting in Manchester, passed a resolution urging

"that the Conservative leaders at once push forward a scheme of development of technical, scientific, and agricultural education for Great Britain and Ireland, and that this scheme must be linked with the system of primary education."

On the other side of the political platform, the Labour party has passed resolutions at recent conferences demanding a free national system of primary, secondary, university, and technical education. At the forthcoming annual conference of the Labour party to be held in January, 1910, the conference will be asked

"to observe the increasing tendency to make use of boy and girl labour in monotonous and uneducational industrial work as fatally destructive in its results upon the health, character, and subsequent industrial efficiency of the boys and girls themselves . . . and to urge upon the Government the desirability of so amending the Factory and Education Acts as to secure to every boy and girl between the ages of fourteen and eighteen efficient physical and technical training."

As the question of industrial education is one which affects the working classes more than any other section of the community, it is obvious that any future legislative action on the matter will be considerably influenced by expressions of opinion from bodies such as the Labour party and the trades unions. There is a danger that organisations of this type may be tempted to use their influence to give an unduly utilitarian bias to the education of boys and girls in the elementary and continuation schools. This danger is, however, more apparent than real, as is shown by (1) the vigorous support given by trades unions and similar bodies to the Workers' Educational Organisation, the object of which is to secure university education in literature, history, political economy, and the like for working men, and (2) the general undercurrent of opinion among workmen that the financial benefits of trade and technical education will ultimately fall to the employer and not to the workman.

At the present time much controversy is taking place respecting the question of apprenticeship. Is it desirable to revive the system of apprenticeship, and if

desirable, is it possible to do so? The general trend of opinion at the present time is that, except for certain isolated trades, a revival of the apprenticeship system is both undesirable and impossible. Apprenticeship gives manual dexterity, but not the general industrial knowledge and intelligence which will enable the boy to adapt himself to changing industrial conditions. Hence it is desirable to make the necessary provision for compulsory education in the principles of different trades. The chief suggestions for effecting this are as follows:—(a) that the "leaving age" should be raised to fifteen years, the later years of school life being given partly to continuing the general education of the boy or girl, and partly to manual, scientific, and industrial work; (b) the establishment of "trade schools" for boys of from thirteen to sixteen years, giving about fifteen hours per week to class-room work in science and English, and about fifteen hours per week in the workshops; (c) compulsory attendance, for about twelve or more hours per week, at day or evening continuation schools for all young persons engaged in industrial work.

The movement for the spread of industrial education among the mass of the population of this country merits the support of the scientific world because of its bearing upon the general intellectual development of the nation as a whole, if that industrial education be framed upon sufficiently broad and generous lines. National progress, whether industrial or scientific, depends upon two main agencies—the organiser or leader and the skilled subordinate. University and higher technical education will produce the first of these, but the second will only be forthcoming in sufficient quantities through the operation of a broad general scheme of industrial education.

J. WILSON.

NILOMETRY.¹

IT is the common fate of the ancient gods of flood and field in these sternly practical days to find their empires gone, their sceptres dishonoured, and even their personal liberty endangered. The Nile is no exception to the rule. The old age of the river of Egypt finds his fitful temper curbed, his moods controlled,

"... all his faults observed,

Set in a note-book, learned and conned by rote."

Where he was master, he has become a slave. Where he ruled, he must now learn to obey.

Such are the reflections induced on turning over the pages of a report, recently issued by the Egyptian Survey Department, dealing with the measurement of the water discharged by the Nile. The patient, persistent efforts of a Governmental bureau are gradually transforming the excesses of a capricious river into quiet and orderly processes adapted in every way to the agricultural needs of the country through which it flows. The construction of the Aswan Dam constituted the first great epoch-making achievement in this direction, and it is being followed up by a series of systematic observations of the regimen of the river which will throw light upon many obscurities in its phenomena, and enable further steps to be taken for its improvement.

The Nile, as is now generally known, is fed almost exclusively by the rain which falls over two elevated areas, the equatorial plateau of Central Africa and the Abyssinian plateau. These two sources act in very different ways, the first affording a relatively

¹ "Measurement of the Volumes Discharged by the Nile during 1905 and 1906." By E. M. Dowson, with a Note on Rating Formulæ for Current-meters, by J. I. Craig. Egyptian Ministry of Finance. Survey Department Paper, No. 11. Pp. 82. (Cairo: National Printing Department.) Price 100 millimes.

small but continuous supply, and the latter, copious but intermittent increments, producing the regular flood effect upon which, until quite recently, the agricultural prosperity of the country depended.

The admeasurement of the variation in the volume of water which is thus discharged necessitated the establishment of a gauging station, and the report states that, on grounds of expediency, a site was chosen at Sarras Old Fort, a little above Wadi Halfa. Here the necessary plant and apparatus were installed. It would take too long, however, to recapitulate, even succinctly, the dispositions which were made and the manner in which various local obstacles were overcome. These were duly related in the report, and the results of the observations taken are tabulated in part ii. of the volume. They include the mean velocity and cross-sectional area of the stream on successive dates, also a chemical analysis of the water and the percentage of mud in suspension. A third section gives a brief mathematical account of various rating formulæ for current meters.

NOTES.

WE regret to see the announcement of the death, on December 5, of Prof. H. Bauerman, at seventy-five years of age. The funeral will take place at Brookwood Cemetery on Friday, December 10.

PROF. A. C. SEWARD, F.R.S., professor of botany in the University of Cambridge, has accepted the invitation of the executive committee of the Yorkshire Naturalists' Union to be president of that society for the year 1910.

THE council of the University of Paris has, we learn from the *Revue scientifique*, passed a resolution to the effect that monuments intended to commemorate men who have brought distinction on the University of Paris since 1808 shall be erected in the church of the Sorbonne. This honour will be awarded on the decision of the council, by a majority of two-thirds, not earlier than ten years after the decease of the person concerned.

WE notice with regret the death of Dr. Jean Binot, on November 25, at the age of forty-two years. Dr. Binot had charge of one of the laboratories of the Pasteur Institute of Paris. Before taking up the study of bacteriology he was associated with astronomy. In 1901 he had charge of an expedition for the study of the transit of Venus, and in connection with this work he was awarded the Janssen prize of the Paris Academy.

AN appeal is being made to the Treasury for funds to complete the publication of the scientific reports of the voyage of the *Scotia*. It appears that the Scottish expedition is the only one of the recent Antarctic expeditions—British, Belgian, German, French, Swedish, and Argentine—that has not received Government help. The appeal is made by the committee of the Scottish National Antarctic Expedition through its honorary secretary, Mr. J. G. Ferrier. An additional grant is asked for beyond the funds for publication, to enable Dr. Bruce to reimburse those who have advanced money beyond their regular subscriptions to the expedition.

THE following are among the lecture arrangements at the Royal Institution before Easter:—Mr. W. Duddell, a Christmas course of six illustrated lectures on modern electricity, adapted to a juvenile auditory: (1) first principles; (2) electrical instruments; (3) Röntgen rays; (4) the generation of electricity; (5) electric oscillations; (6) electric lighting; Prof. W. A. Herdman, three lectures on the cultivation of the sea; Rev. C. H. W. Johns, two