

No doubt this etiquette is inspired from the highest quarters, but Mr. Bashforth was not the man to take such treatment lying down; he did not rest till he had extracted a written minute, acknowledging that his experiments had been adopted officially. But a bad mark has been put against him for his audacity; for while other inventors have been rewarded, we have yet to learn that Mr. Bashforth has received any acknowledgment from our own Government, either of a tangible or complimentary nature.

TEACHING THE TEACHERS.

Thirty Years of Teaching. By L. C. Miall, F.R.S., Professor of Biology in the Yorkshire College. Pp. viii + 250. (London: Macmillan and Co., Ltd., 1897.)

A FRIENDLY criticism of schoolmasters and their ways, written by a professor of biology, is a book of special value. Biology is a subject not usually taught in schools, and students taking it up at college are not in the condition which the schoolmaster is fond of describing as "thoroughly well-grounded in the elementary parts of the subject," and the scientific professor as "crammed with a multitude of imperfectly understood facts." The professor of biology therefore, in forming an opinion upon the previous training of his pupils, thinks more of the mental habits which they have formed than of the knowledge which they have acquired.

Prof. Miall is singularly fortunate in his suggestions upon the teaching of special subjects:—that geography should be taught mainly by means of map drawing; that text-books should be used merely as works of reference; that lessons in arithmetic and geometry should include practical work in measurement; that in teaching modern languages the written or spoken language should be made the basis, and instruction in grammar founded upon it; that mastery of English does not come by grammar and analysis, but by observation and practice; that true science consists in a scientific habit of mind, and not in a knowledge of scientific facts; that the present system of teaching classics to boys who leave school at sixteen, is laying a costly foundation for a structure which will never be built. These are truths which schoolmasters may or may not believe, but which very few of them follow in practice, influenced as they are chiefly by the demands of examinations, but also in part by the large numbers in their classes, and by the inertia of human nature. All that Prof. Miall says upon the method of teaching of every subject is well worthy the careful attention of every schoolmaster. Prof. Miall, too, shows a keen insight when he speaks of the true value of examinations, while the statement that the University local examinations were once a great step forward, but that they have now (like other human institutions) outlived their usefulness, and become rather a hindrance than a help, is one which may mark an epoch in the history of middle-class education.

In one point, however, we find the experience of the professor somewhat at variance with that of the schoolmaster. Prof. Miall appears entirely to overlook the moral elements of boyhood: he tells us, for instance, that boys will work at a subject in proportion to their interest in it; this is probably the case with students,

but it is conspicuously not the case with schoolboys. The chief factor in causing the industry of a schoolboy is his sense of duty; the industrious boy is the one who has a strong sense of duty, the idle boy is he in whom the sense of duty has not been aroused; the main thing in which boys always will be interested is not their lesson, but each other. Again, Prof. Miall would abolish home-work for younger boys, and commence it with boys over fourteen; but, in this case, how much home-work would he get done? We venture to say that if boys had not formed the habit of doing a regular hour's evening work by the time they were twelve, they would never begin at all; and the object of setting home-work to young boys is not to replace teaching, but to assist in forming regular and industrious habits. A few other instances might be given in which the experience gained by observing students would only lead to failure when applied to the teaching of schoolboys; and we doubt whether any boys could be taught by *class* lessons to read, write, and speak French by the age of fourteen.

Prof. Miall gives us some striking remarks upon the absurdity of extreme precision when based upon loose data, and some interesting biographies occupy the final chapters of his book; on the whole, we can thoroughly recommend "Thirty Years of Teaching" for the perusal of every schoolmaster and every parent in the country.

OUR BOOK SHELF.

Abhandlungen zur Physiologie der Gesichtsempfindungen. Edited by J. von Kries. Vol. i. Pp. vi + 198. (Hamburg and Leipzig: Leopold Voss, 1897.)

The five papers in this volume are contributions from the Freiburg Physiological Institute, reprinted from the *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*. Dr. von Kries is the author of three papers dealing with the functions of the retinal elements, subjective effects produced by light of short duration, and colour vision, in the course of which a number of observations on the visual effects of different parts of the spectrum on different colour-blind individuals are recorded. Two other papers included in the collection are on the influence of light-intensity and adaptation on the vision of green-blind subjects, by Drs. J. v. Kries and W. Nagel; and on the influence of the yellow-spot—the part of the retina which lies directly in the axis of vision—upon colour appreciation, by Dr. Breuer.

Cuirassés et Projectiles de Marine. By E. Vallier. Pp. 188. (Paris: Gauthier-Villars et Fils; Masson et C^{ie}, 1897.)

Les Huiles minérales; Pétrole, Schiste, Lignite. By François Miron. Pp. 198. (Same publishers.)

BOTH these volumes appear in the *Encyclopédie scientifique des Aide-Mémoire* series. M. Vallier's volume deals with the various kinds of armour-plates used upon men-of-war of different nations, and the projectiles employed for attacking these ironclads. In M. Miron's book, the extraction, composition, use, and analysis of mineral oils is described.

Botanische Wanderungen in Brasilien. By Prof. Dr. W. Detmer. Pp. vi + 188. (Leipzig: Veit and Co., 1897.)

It is not given to many of us to realise our heart's desire, yet this is what Prof. Detmer did when he made a journey to Brazil. The impressions received from the start to the home-coming are set down in this little book, and the whole make an interesting narrative. The journey taken was through the States of Bahia, Rio de Janeiro, Minas Geraes, San Paulo, and Espirito Santo.