sentence as was passed in another Italian town on a Cambridge don who had 'Senior Wrangler' inscribed on his passport. The police translated it as 'inveterate brawler'! and he was in consequence denied permission to travel, and was detained eight days before being allowed to proceed."

Chemical Lecture Experiments. By Francis Gano Benedict, Ph.D. Pp. xiv+436. (New York: The Macmillan Company, 1901.)

THE days of that ancient bugbear, the "Guide to Knowledge," containing in the form of questions and answers a concise *résumé* of all "the scientific facts that a well-educated boy or girl should have learnt," are fast coming to an end. Dr. Benedict has struck another blow at them in issuing his manual of "Chemical Lecture Experiments." The aim of the book is to furnish teachers with a set of trustworthy experiments which can be carried out with ordinary, simple apparatus, all others being rigorously excluded.

It is unnecessary nowadays to comment on the value of experimental demonstrations in a lecture-room, and, as the author points out in his preface, it is unwise to neglect them and trust entirely to laboratory exercises. The latter, "however great their influence in developing the experimental side of teaching the science, have their limitations experimentally and educationally, and cannot supplant the experimental lecture, for it is in the lecture, and there only, where each experiment stands out clearly defined and unattended by the distractions necessarily accompanying laboratory exercises, that the first accurate observations of chemical phenomena can be made by students."

The testimony and example of such illustrious teachers as Bunsen, Liebig, Victor Meyer, and in our own day of Ostwald, Fischer and Moissan, are arguments strong enough to overcome any objections, and Dr. Benedict is to be congratulated on his efforts to lighten the task of the overworked and much-abused teacher. Although he may not be able to lay claim to any great originality, the field having already been pioneered by Arendt and Heumann and Newth, he has succeeded in collecting a good series of experiments to illustrate an elementary course of inorganic chemistry, which, by reason of the careful descriptions and clear diagrams, will commend themselves to all who are conducting classes with only a very limited supply of apparatus and means.

A Manual of Laboratory Physics. By H. M. Tory, M.A., and F. H. Pitcher, M.Sc. Pp. ix + 284. (New York: John Wiley and Sons, 1901.)

THE rapid extension of the study of practical physics in recent years is shown by the number of books which have been published lately dealing with this subject, but we cannot say that much originality has been shown either in the mode of treatment or in subject matter. The exercises are generally those with which teachers are well acquainted. In this book the object of the authors has been to compile notes which will save the demonstrator as much separate explanation as possible. It will therefore be of use in laboratories where funds do not permit many assistant demonstrators to be employed.

The book deals with the whole of physics except mechanics and hydrostatics. Each exercise is divided into the following sections: References to books dealing with the special phenomenon; apparatus required; theory of the experiment; practical directions; example; and a blank to be filled in by the student.

There are a few points about which a word or two may be said. We should have liked to have seen more stress laid on the necessity of students recording the precise nature of the quantities in terms of which their measurements are made. It is not well for them, for example, to see the velocity of sound expressed as 34230 cm. Some of the diagrams leave much to be desired; that of the trace left by a tuning-fork on a falling smoked plate is strangely irregular. The present writer has not tried this experiment under the conditions shown in the figure, but he would expect to get a more intelligible record. The trace obtained with the pendulum-chronograph is also very unlike what we should expect.

The simple wire bridge for measuring resistances is described as the B.A. bridge. We were under the impression that the particular modification introduced by the committee of the British Association was that in which arrangements were made for using Carey Foster's system of interchanging a pair of nearly equal coils.

A good deal of attention is given to the testing and calibration of ammeters. This is very useful to those students going on to the engineering side of physics.

It may be of interest to consider the directions in which a development of practical physics teaching may be expected. There seem to be two ways open for this to take place. The first is to make the laboratory exercises follow precisely the course of lectures, so that the student performs experiments which illustrate what he has been taught in the lecture. This is the rational way of coordinating the teaching and practical work, but it is open to the objection that a much larger stock of apparatus is required. The second direction of development is to allow the student to make the greater part of his apparatus, and this forms the best training for research. Such books as Prof. Threlfall's "Laboratory Arts" is a step in the latter direction, whilst some of the modern more elementary text-books are on the former plan.

In another way this book is of interest to us, as it shows the standard of work reached in the elementary classes in the McGill University, where the physical laboratory is one of the finest and best fitted departments. So far as one can judge, the standard is much the same as in similar classes at home. S. S.

The Story of Wild Flowers. By Rev. Prof. G. Henslow, M.A., F.L.S., F.G.S., &c. With forty-six figures in text. Pp. viii+249. (London: George Newnes, Ltd., 1901.) Price 1*s.*

THIS interesting little book contains much more than its title might seem to imply, since it treats, not only of flowers, but also of the lives and forms of flowering plants, their distribution and evolution. Though both readable and instructive, this booklet loses much in value as a trustworthy popular introduction to botany because its author has elected to saturate it with the extreme form of neo-Lamarckism, of which he is so fervid and, in this country, so isolated an advocate. Much of Prof. Henslow's treatment of the subject is refreshing, and in this respect the chapters on stipules and on vegetative sports, as well as the occasional references to horticultural operations, are especially worthy of note. The author's views on morphology do not, however, always accord with modern opinions; he writes, for instance, "The leaf usually consists of two parts, the leaf-stalk . . . and the blade . . ." (p. 64). "The homology of bracts is various. They may be *stipular* as in Magnolias, more generally are *petiolar* as in Hellebore . . ." (p. 97). Other not generally accepted views are those expressed in reference to the cause of the rosette-form of "high Alpine plants" (p. 103), the significance of circumnutation in twiners (p. 100), and the object of movements of leaves (p. 104). But most open to criticism are the explanations offered of the origin of certain structural and habitual features by the inheritance of the effects of repeated stimuli. In the second volume, on non-European flowering plants, which the author half promises, it is to be hoped that attention will be directed rather to the well-tested facts of evolution than to mere hypotheses as to the precise causes of evolution in special cases.