oxides and hydrides, acids, bases and salts, halogen compounds and sulphides.

The preparation of the nitrides of calcium and boron strikes us as strange. The calcium or boron are heated in the air, and so one obtains a mixture of oxide and nitride. As, however, the oxide and nitride cannot be separated, there seems very little point in the experiment, except that the student's attention is directed to ammonia from the air. Certainly, but if the air is first passed over red-hot copper, thus freed from oxygen, and subsequently passed over the heated calcium or boron, surely the experiment is much more striking, and, further, the pure nitride is prepared. This method of preparation would also lead up to a discussion of argon and similar gases.

The book will undoubtedly be of great use to teachers of inorganic chemistry and others who wish to study the subject from a preparatory point of view, but it is rather too full for the average student, who would certainly require very careful direction, or he would be inclined to wander along in a rather aimless fashion. F. M. P.

The Bacteriological Examination of Disinfectants. By William Partridge. With a preface by Major C. E. P. Fowler. Pp. 66. (London: The Sanitary Publishing Co., Ltd., 1907.) Price 2*s.* 6*d.* net.

THE subject of disinfectants has lately attracted considerable attention, and Mr. Partridge's little book forms a very useful summary of the methods employed for testing bacteriologically the germicidal value of disinfectants. The Rideal-Walker or "drop" method is rightly that most favoured, and the major part of the book is devoted to it. We doubt if the explanation given on p. 17, that a forty-eight hours' culture of *B. typhosus* is less readily killed by a disinfectant than a twenty-four hours' one, because it is more vigorous, is correct; we should ascribe the fact rather to the greater number of bacilli and to clumping in the older culture. On p. 18 it is said that while a broth having a reaction of +1·5 is suitable for the culture of the typhoid bacillus, for the diphtheria and cholera organisms a "neutral or alkaline broth must be substituted." The broth named is quite suitable for these organisms, for it is alkaline in the ordinary acceptation of the term; though acid to phenolphthalein, it is still alkaline to litmus. On p. 34 an experiment is quoted to show that an organism from different sources may have a different resisting power from a disinfectant. Doubtless this is so, but the experiment does not prove it. The experiment shows that two strains of the typhoid bacillus, with strengths of carbolic of 1 in 70 and 1 in 100 respectively, are killed in between 5 and 7½ minutes; obviously the one might have been killed in 5¼ minutes, the other in 7¼ minutes, and actually there might have been little difference between them. Everyone has his own method of manipulating tubes for inoculation, but we do not like either method depicted in Figs. 3 and 4. Major Fowler, R.A.M.C., contributes a useful introduction.

R. T. HEWLETT.

Ergebnisse und Fortschritte der Zoologie. Edited by Dr. J. W. Spengel. Vol. i., part i. (Jena: Gustav Fischer.)

UNDER the above title Mr. Gustav Fischer is issuing a new zoological journal, of which a variable number of parts are to appear each year, the whole to form an annual volume at the price of sixty marks. As no prospectus is issued with the part now before us, we are unable to indicate the ground which the publication is specially intended to cover. The present part contains 238 somewhat closely printed 8vo pages, illustrated by fifty text-figures; and from this we presume that plates do not enter into the scheme of the new venture. The name of the editor is a sufficient guarantee that only papers of a high order will be accepted for publication, this being fully borne out by the contents of the initial number. These comprise a discussion on chromosomes by Mr. Valentin Häcker, of Stuttgart; an article by Dr. Richard Heymons on the various types of insect metamorphosis, and their relation to the metamorphoses of other arthropods; and another, by Mr. O. Maas, of Munich, on the scyphomedusæ. The new enterprise has our best wishes for success. R. L.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

Seismographs and Seismograms.

As I have had occasion to study and compare the records of nearly all the types of seismographs for recording distant earthquakes which are now in use, I may perhaps be permitted to add something to Prof. Milne's letter in NATURE of January 2. The nature of the records, and the relative merits of different types, of seismographs, are not generally apprehended in England, and appear to be misunderstood in Strassburg, from whence much of the recent seismological literature has been inspired.

The two leading problems of seismology, as it stands at present, are the determination *firstly*, of the exact nature and amount of the movement which takes place, and, *secondly*, of the time requisite for the transmission of the different types of disturbance from the origin, to various distances, and in various directions, through the earth, or along its surface. The first of these is naturally the special object of purely seismological stations and observatories, and for it no single instrument or type of instrument will be sufficient. From the mathematical and experimental investigations of the mechanics of seismographs by Prince Galitzin, Prof. Rudzki and others, it has been conclusively established that no form of instrument, having a pendular period of vibration of its own, however perfectly the oscillations may be damped, can possibly record with exactitude an undulatory movement of the soil such as is caused by earthquakes. As every instrument giving a continuous record must necessarily be of the nature of a pendulum of some sort or other, owing to the necessity for bringing the recording point back to the zero line of the record, it is obvious that no single instrument can suffice for this purpose, and that the only way, by which an understanding of the nature of the movement of the soil can be arrived at, is by installing a number of instruments, of different types and varying response to movements in diverse directions and of unlike period.

For the second purpose a totally different set of conditions comes in. It is no longer necessary to attempt an exact, or even an approximate, representation of the actual movement of the ground, so long as the instruments give records in which the different phases of wave motion can be recognised with reasonable certainty; but, since the solution of this problem involves the collection of numerous records from many stations, it is necessary to obtain the cooperation of astronomical, physical, meteorological, and other observatories, and, consequently, certain conditions, which may be ignored in a specially seismological station, have to be taken into consideration. These are:—

(1) The instrument must not be unduly cumbrous or bulky; it must be easy of transport, occupy only a moderate floor space, and not require special and expensive foundations.

(2) It must run without much attention, and at as moderate a cost as possible.

(3) It must be sufficiently sensitive and consistent in its action to give records capable of interpretation as a general