general which have approved themselves to him during his long experience. As the author frankly admits, this is not a complete work for beginners, as all theory of construction is omitted; but as an adjunct to existing text-books it must prove of great service, being especially rich in examples of conventional representation and of line shading. Incidentally it shows also the remarkable adaptability of the author's system of lettering to reduction by photo-processes.

F. N. WILLSON.

PRINCETON UNIVERSITY.

BOOKS RECEIVED.

Elements of Mineralogy, Crystallography and Blowpipe Analysis. ALFRED J. MOSES and C. L. PARSONS. New York, D. Van Nostrand Company. 1900. Pp. vii + 409.

Elements of Physics for Use in High Schools. HENRY CREW. New York, The Macmillan Company. 1900. Second Edition Revised. Pp. xvi + 353. $1.10.

Ethnology. MICHAEL HABERLANDT. Translated by J. H. LOEW, London, Dent. Pp. viii + 169.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Journal of Physiology* for October contains a very interesting and suggestive article by D. J. Lingle on 'The Action of certain Ions on Ventricular Muscle.' Particular attention is paid to the rhythmic activity of heart tissue as an ion effect. Strips from the ventricle of the turtle's heart were placed in solutions of non-conductors, in solutions of sodium, of calcium, and of potassium, and in solutions of these salts combined. Lingle found that the non-conductors he used (cane sugar, dextrose, glycerine) did not occasion rhythmic beats in the heart strips. In the solution of sodium salts, however, the strips always beat rhythmically. If a strip is kept in the solution the beats reach a maximum and then gradually decline to a complete standstill. The stopping is apparently due to poisonous action of the sodium salt alone, for the rhythm is prolonged by diluting the solution in which the strip remains or by exposing the strip for a shorter interval to the action of the strong solution. When transferred to solutions of sodium salts, strips which have been quiescent in non-conductors begin to beat as suddenly as if started by an electric shock. The application of calcium salts and the treatment of the tissue so that an excess of calcium salts remains in the tissue both fail to start rhythmic beats. Potassium salts are likewise ineffective. Moreover calcium and potassium in combination do not start beats, while sodium chloride always succeeds. These results have a remarkable similarity to the results obtained by Loeb on rhythmic contractions in striped muscle and the tissue of the swimming bell. According to Lingle, sodium and not calcium is the stimulus for rhythmic contraction in the heart; calcium and possibly potassium salts improve the rhythm by neutralizing the injurious action of pure sodium salt solutions. W. T. Porter and H. G. Beyer in a paper on 'The Relation of the Depressor Nerve to the Vasomotor Center' raise the question, Does the bulbar vasomotor center act as a physiological unit to lower or raise the general blood-pressure, or has it parts regulating the regional distribution of blood? This question they have endeavored to answer by investigating the depressor nerve, an afferent nerve regarded by Cyon and Ludwig as stimulating the bulbar vasomotor center to cause especial dilatation of abdominal blood vessels. First the depressor nerve was stimulated when the splanchnic nerves were prepared for experimentation but still intact. This caused a fall in blood-pressure usually from 35 to 40 per cent. Next the abdominal vessels were removed from vasomotor influence by cutting the splanchnic nerves. The blood-pressure which falls on cutting these nerves was restored to the normal level either by stimulating the peripheral ends of the cut nerves, or by intravenous injection of normal salt solution. Now, with the abdominal vessels free from vasomotor influence and the blood-pressure normal, the depressor nerves were again stimulated. The blood-pressure fell usually as much as it had previously fallen when the abdominal vessels were still connected with the bulb. From their results the investigators conclude that the depressor nerve has no special connection with cells controlling vasomotor fibers of the splanchnic nerves, and they express the opin-