appearance of the protoplasmatic network of cells. If these appearances are real, Dr. Heitzmann's best plan of securing recognition for his views would be to send preparations to be examined by histologists of experience in research. The discovery of the reticular character of protoplasm is very interesting, and our author deserves praise for insisting on this point; but we find in his volume little to awaken the expectation that it will earn recognition for the 'bioplasson doctrine;' which, in our opinion, is not shown to deserve serious consideration, although it is possible or even probable that in certain cases a secondary connection is established between the protoplasm of adjacent cells.

It should be added that special consideration of the pathological chapters has been purposely omitted from this notice as inappropriate here.

EUROPEAN ORTHOPTERA.

Prodromus der europäischen Orthoptera. Von C. BBUNNER VON WATTENWYL. Leipzig, *Engelmann*, 1882. 32, 466 p., 11 pl., map. 8°.

THE activity of systematists within the past thirty years has rarely received a more striking proof than in the publication of the volume before us. When H. Fischer published his classic work on European Orthoptera, the number of recognized species on that continent was less than two hundred and fifty. Brunner, one of our leading writers, now places the number at very nearly double the former figure. The increase is particularly marked in the Locustariae, which have nearly trebled.[1] Already, while Fischer's work was passing through the press, Fieber was making discoveries in the little worked region of south-eastern Europe; and, of late years, Bolivar and others have shown how little the Iberian peninsula was known; yet one would scarcely have looked for such striking additions in so old a field as Europe, and among such bulky insects as the Orthoptera.

Meanwhile there has been great activity in the study of Orthoptera of other parts of the world; and it may safely be said, that, if the number of European Orthoptera has doubled, that of the world at large has quadrupled in the same period. This has entailed much revision and remodelling, in the work of which Brunner, Saussure, and the gifted and lamented Stål, have performed the most honorable part, though they may have been outdone in (diluted) quantity by Walker.

[1] Brunner credits Ephippigera with forty-nine species, of which only ten are given by Fischer. The additions are largely from Bolivar's work in Spain.

There was need, then, that some one should crystallize the methods of recent days for a region so abounding in workers as Europe. This Brunner has now attempted.

He disclaims at the outset any attempt at a monograph. Europe, he rightly says, is no natural province, and the Orthoptera, in the sense of the older naturalists as used in his work, no natural order. For the convenience only of the numerous workers in this region upon the somewhat heterogeneous groups which have been classed under Orthoptera, he issues this Prodromus. It is excellent as a systematic review. The groups are clearly and succinctly defined, but the work is mainly of value in a faunal sense. There is no superfluity of language; analytical tables abound; the balance of parts is admirable; every genus is well illustrated; and, as an expression and synthesis of current toxonomic views, it will serve a most useful purpose. But the biology of these insects is entirely and purposely overlooked; and there is yet room for some one, working upon the excellent model of Fischer, but with the light the newer biological studies have given, to produce a work which shall be classical, and far more fruitful than this can be.

MACHINERY AT PARIS, 1878.

Rapports du jury international, groupe VI., classe 54 : Les machines et les appareils de la méchanique générale. Par M. HIRSCH, ingénieur des ponts et chaussées. Paris, *Imprimerie nationale*, 1883. 8°.

M. HIRSCH has collated and edited the notes of the members of the section of the jury of which he was secretary, and compiled a very extensive and detailed report, with the addition of considerable matter original with himself, thus making a valuable work of the official report. The principal classes of exhibits here examined are steam engines and boilers, with their accessories (divided into stationary and locomotive engines and portable machines), hot-air engines, electric and other motors, hydraulic machinery, compressed-air apparatus, machinery of transmission, machinery of transportation, dynamometers, and miscellaneous parts of machinery. There seem to have been no steam-boilers or accessories from the United States except the Hancock inspirator, which is well noticed. The engines of Corliss and Wheelock are studied at length, and apparently with very satisfactory results, the latter taking the *grande médaille*. A large number of engines were exhibited, — copies of the American Corliss engine, which has evidently