for chemical study, but the discoverer of the spectroscope was almost forgotten. A few brief years passed by, and as the light of the brilliant meteor is suddenly extinguished, so Victor Meyer was no more. But still Bunsen lingered, as if loath that a single year of the century ushered in by his master Wöhler should be left without the presence of one of the giant minds of chemistry. But now he too is gone and the last link between the past and the present is severed as far as lives go; but upon the foundations laid by Bunsen many a superstructure will continue to rest, and yet many another building will be erected.

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SCIENTIFIC BOOKS.

Anatomie des Frosches auf Grund eigener Untersuchungen. By A. ECKER und R. WIEDERSHEIM, durchaus neu bearbeitet von DR. ERNST GAUPP. Zweite Abteilung, Zweite Hälfte. Lehre vom Gefässsystem. Braunschweig, 1899, pp. XII. and 237–548.

Some time ago (this JOURNAL, Vol. VII., p. 463) we had occasion to notice the first and second parts of Gaupp's edition of Ecker on the frog, and now the third part of the same work lies before us. This part is devoted solely to the anatomy of the vascular system and here, as in the sections devoted to the skeleton, muscles and nerves, we find what is practically a new treatment, and not merely a revision of an old work. Not only has every page been rewritten, but every illustration has been redrawn, and most of them are printed in colors, adding not a little to the clearness.

It is impossible to summarize these 312 pages nor to point out what is new in them, for that would require more space than we can give. As one would naturally expect, the additions and changes are less in the parts relating to the arteries and veins, but even here they are numerous. The heart is described with far more accuracy and detail than ever before. It is, however, in the lymph system that the changes are the greatest. In fact, this section is almost wholly a new investigation. In the former editions there was a brief account of the lymph-hearts and of some of the sub-cutaneous lymph-sacs and that was all. Dr. Gaupp has studied not only all of these (he has added four sub-cutaneous lymph sacs not recognized before), but he has described with the greatest detail the lymph spaces which are scattered through the body and has made out the openings by which they communicate with one another.

As we turn over the pages of the work we wonder what the technique has been and many may be glad to learn his methods. For injections of the arterial system he found that shellac solutions were most useful, while for the venous system he depended largely upon natural injections, the blood settling in these vessels. To aid in this the animals were hung in various positions so that the blood might flow into the various portions. Then a transfer to formalin produced coagulation. A similar coagulation of the lymph as well as the well-known method of inflation with air aided in the demonstration of the lymph sacs and spaces; while the communications between these (minute openings in the thin and almost transparent membranes) were rendered visible by means of absolute alcohol and weak solutions of iodine.

In conclusion we may say that we have only praise for this part of the work, and that, while in a few places we find differences from conditions which occur in our American frogs, we find nothing that we can regard as serious errors. The probabilities are that it will never be translated, but it is a treatise which should be on the shelves of every laboratory. The clear and simple German in which it is written will make its contents easily accessible to the great majority of our college students. The concluding part dealing with the viscera, integument and sense organs, is promised shortly.

J. S. KINGSLEY.

The Fixation, Staining and Structure of Protoplasm, a Critical Consideration of the Theory and Technique of Modern Cell-study. By DR. ALFRED FISCHER (Leipsic), royal octavo, 362 pages, 1 double plate and 21 figures in text. Published by G. Fischer, Jena, 1899.

The history of the closing cycle of botanical