market has been glutted with what appears to be lacquered brass-work."

This is well expressed, and needs but one word in addition, as to the remedy: On this point we advise the microscopist to recur to the good, but old-fashioned plan, of gradually building up his microscope and its accessories. Let his money accumulate until he can purchase a first-class stand of a reliable maker, the adjustments of which will be reliable, and arranged to receive all necessary accessories as they are added. With such a base of operation, he will have nothing to retract, and every step will be one of progress.

In justice to some makers in America, it must be admitted that they have produced, recently, some moderately-priced instruments which are well finished; but there are also some students' microscopes, on the market, carelessly made, badly constructed, and unfit for scientific work.

As to objectives the writer in the *Eng. Mech.*, above referred to, says: "Large firms abroad, who are not opticians at all, and whose appliances are suited to the production of bull's-eye lenses, &c., have been induced to 'take up' with the microscope, and thus thousands of things called objectives have been floated that are a disgrace to microscopy. Here and there an advertiser of microscopes obtains these things, patches on some trumpery adapter that conceals the original make, and disposes of the wares as 'our own first-class manufacture;' the unwary student finds out how he has been imposed upon only when experience has taught him the meaning of good optical appliances, among which those he is unhappily possessed of take no rank whatever."

We have no doubt the writer has good reason for making this exposure of the tricks of opticians. The practice of importing objectives and, after remounting, passing them off as "*our own first-class manufacture*," is not confined to Europe. When in London, on one occasion, we were shown a written order from a well-known American objective maker, for a quantity of objectives, to be used for this very purpose.

It is certainly a disgraceful state of things that a microscopist, who purchases an objective of a reputable maker, should receive a glass manufactured by an inferior house, whose prices are probably 50 per cent less.

Purchasers of microscopes and objectives in the United States, who endeavor to steer a course between exorbitant charges and inferior workmanship, have need of much caution, and if inexperienced, should not rely on their own judgment.

The number of microscopists in this country appears to be on the increase if we may draw conclusions from the statement of a maker, who asserts that he has orders in hand which will keep him employed for four months.

PHYSIOLOGY.

Mr. Simon H. Gage has just been appointed Assistant Professor of Physiology, and Lecturer on Microscopical Technology in Cornell University. While a student in the Natural History course at that institution, Mr. Gage acted as laboratory assistant, and since his graduation, in 1877, has been Instructor in Microscopy and Practical Physiology. He has published several papers, mostly microscopical, some of which have been copied into European Journals. In addition to the supervision of other laboratory work, Mr. Gage gives practical lectures upon Microscopical Technology, in all its branches, and upon Microscopy in relation to Medical Jurisprudence. His deserved appointment will not only strengthen the general Natural History instruction, but greatly aid Professor Wilder's efforts to provide preliminary medical education.

The following list of the published papers of Mr. Gage will give some idea of his scientific activity, and indicate his special line of research:

1. Plaster of Paris as an Injecting Mass.—*American Naturalist*, November, 1878, pp. 717–724.
2. Notes on the Cayuga Lake Star Gazer.—*Cornell Review*, November, 1878, pp. 91–94.
3. The Ampulla of Vater and the Pancreatic Ducts in the Domestic Cat, Felis Domestica.—*The American Quarterly Microscopical Journal*, January, 1879. pp. 123-131, and April, 169–180.
4. Laboratory Notes in Microscopy.—*Am. Q. M. Jour.* Vol. I., pp. 71, 160, 166. Part of these were copied in the *Journal of the Royal Microscopical Society*, of London, 1879, p. 191. and also in the *American Journal of Microscopy and Popular Science*, 1879, p. 176.
5. The Inter-Articular Ligament of the Head of the Ribs in the Cat.—*Proc. of the Am. Association for the Advancement of Science*, Saratoga Meeting, 1879, pp. 421–424.
6. A New Method of Demonstrating the Thoracic Duct in Animals.—*Proc. A. A. A. S.*, 1879, p. 425.
7. An Apparatus for Photographing Natural History Objects in a Horizontal Position. Read before the A. A. A. S., at Saratoga, and published by title in the proceedings for 1879, p. 489.
8. Preparation of Ranvier's Picro-Carmine.—*American Monthly Microscopical Journal*, 1880, pp. 22-23. Copied in the *Jour. of the Royal Mic. Soc. of London*, 1880. pp. 501–502.
9. Permanent Microscopical Preparations of Amphibian Blood. Read at the Boston Meeting of the A. A. A. S., and published in the *American Naturalist*, October, 1880, pp. 752–753.
10. Permanent Microscopical Preparations of Plasmodium. Read at the Boston Meeting of the A. A. A. S., and published in the *Am. M. Mic. Jour.*, October, 1880, pp. 173–174.
11. A supplement to the article on calcareous crystals in Amphibia, by Professor Bolton, of Trinity College. This supplement was prepared at his request, and published with his paper in the *Proc. of the A. A. A. S.*, 1879, p. 418.

Finally Dr. Wilder and Mr. Gage have been preparing a laboratory manual for the last two years, which will be published next fall.

For an opinion as to the value of the laboratory notes, etc., mentioned above, see the Proceedings of the New York Microscopical Society, as published in the *Am. Jour. of Mic. and Pop. Science*. Feb., 1880, p. 51.

CHEMICAL NOTES.

ULMIC MATERIALS PRODUCED BY THE ACTION OF ACIDS UPON SUGAR.—The formulæ ascribed by Mulder to the ulmic products which had been dried at from 140° to 165° before being submitted to combustion are not admissible, since, at temperatures above 100°, these bodies lose a notable quantity of volatile matter, and in particular of formic acid. The ulmic substances obtained by the action of dilute sulphuric acid upon sugar, and which may be called sacchulmine, appear in the form of minute yellowish brown globules. On treatment with a cold aqueous solution of caustic potassa, sacchulmine gives off an acid principle derived from the action of sulphuric acid upon glucose. The ulmic matter (sacchulmine), insoluble in cold alkaline liquids, is derived directly from saccharose. In the ulmification of sugar there is evolved a considerable quantity of volatile acids, especially formic acid.—F. SESTINI.—*Gazzetta Chimica Italiana.*

THE DIFFUSION AND THE PHYSIOLOGICAL CONDITION OF COPPER IN THE ANIMAL ORGANISM.—Prof Giovanni Bizio has attempted to prove that his father, Bartolomeo Bizio, was the original discoverer of the normal occurrence of copper in the animal economy.

CHEMICAL CONSTITUTION OF MILK.—Caseine is not a homogeneous albuminoid, but a mixture of albumen and protalb-bodies which appear as transition stages in peptonisation. In the milk globules has been found an albumenoid which constitutes the serum. In the curd are met with an albuminous body identical with the stromæi alb-compound of the globules, a body which Danilewsky and Radenhausen name orroproteine and two series of peptones. Hence it is no longer proper, in milk-analysis, to speak of caseine and albumen, but rather of albuminates.—DR. N. GERBER.—*Correspondenz-Blatt.*

OCCURANCE OF COPPER.—Dr. W. Hadelich has detected and determined copper in the soil of a churchyard, and in portions of exhumed bodies.

SIMPLE METHOD OF OBSERVING THE PHENOMENA OF DIFFRACTION.—The rays reflected by a heliostat are concentrated by two lenses. In the focus is placed a diaphragm with a very small aperture, and the luminous glass is received on a screen. In this glass are placed the bodies whose shadows are to be studied.—V. D. Vorak.