the contents of the young sieve-tubes. Isolated drops or irregular masses appear in the layer of protoplasm lining the cell cavity before the disappearance of the nucleus. These consist of a slimy stuff (*Schleim*) apparently rich in nitrogen.[1] The separate masses later fuse together to form a band, which is usually much narrower than the girth of the cell. Between this and the wall of the sieve tube a protoplasmic envelope intervenes (*Hüllschlauch*). The central cavity within these is filled with "sieve-tube sap." For further details concerning the contents of the sieve-tubes the reader must be referred to the original work.

The author has not been able to observe directly the first appearance of connection through the pores of the sieve; but suggests that it is effected by the outgrowth of protuberances of the envelope (*Hüllschlauch*) from opposite sides of the sieve, which penetrate it and coalesce to form the connecting strings.

The presence of starch grains noticed by Briosi is confirmed by Wilhelm in Vitis. He finds them in members of sieve-tubes which are still closed. He opposes the idea that they pass through the sieve on ground of their size. In Cucurbita and Lagenaria they are absent. Besides the communication of sieve-tubes with one another laterally, so as to form a complete system, Dr. Wilhelm has observed in the case of Vitis a further connection, through the medullary rays, of tubes lying on opposite sides of the ray. This is effected by special sieve tubes, produced by transformation of cells of the medullary ray, so as to form a series of very short members; these correspond in development and structure with the ordinary sieve-tube. They traverse the medullary rays in an obliquely tangential direction. Such communications are not found in Cucurbita or Lagenaria.

The question of function has not been solved by these observations. Dr. Wilhelm still holds the view, propounded by Nägeli, that the function of the sieve-tube is the transference of indiffusible substances from place to place in the plant.

In conclusion it may be remarked that the paper is well written, but that it is of such a character as to be interesting only to the specialist. The plates, of which there are nine, are executed with great skill and exactitude.

F. ORPEN BOWER

OUR BOOK SHELF

The Elementary Geometry of Conics. By C. Taylor, M.A. Third Edition. (Cambridge: Deighton, 1880.)

MR. TAYLOR has been before the public as a writer on geometrical conics since 1863, in which year he brought out his "Geometrical Conics"; in 1872 we have the first edition, and in 1873 the second edition of his "The Geometry of Conics," a smaller work than his first book (1863). Now we have a third edition with the above title. In May, 1875, Mr. Taylor, in a paper entitled "On the Method of Reversion applied to the Transformation of Angles" (read before the Mathematical Society, and subsequently printed in a more extended form in the *Quarterly Journal*, No. 53, 1875, with the title "The Homographic Transformation of Angles"), called attention to a "neglected work on conics by G. Walker, F.R.S. (1794)": in this work we first meet with the properties of a circle, which Walker calls the *generating circle*, but which Mr. Taylor, in the work before us, styles the *eccentric circle*; in the free use of this circle consists the main feature in the alterations made in this new edition; further, though still keeping well in view the proving chord-properties independently of tangent-properties, there is a rearrangement of the text; so that the two properties are not treated of in distinct chapters. In other ways also we think this little work is improved, but we need say no more upon a third edition.

[1] Cf. De Bary, "Vergl. Anat.," p. 185.

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. No notice is taken of anonymous communications.*]

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Ceraski's New Variable Star

UNLESS the principal fact mentioned below has already come to your notice, you may like to bring it before the astronomical public in the columns of NATURE.

The true period of the variable star recently discovered at Moscow (*Durchmusterung*, zone + 81°, No. 25) appears to be two days and a half, instead of five as given in NATURE, vol. xxii. p. 455. Minima were observed at the Harvard College Observatory on September 23 and 28. The changes of the star will accordingly be visible in England on October 13, 18, 23, 28, &c., during the three or four hours before or after midnight. The rapidity of the change is probably greater in the case of this star than in that of any other known variable, the variation exceeding a magnitude in the course of one hour. The total variation is more than two magnitudes. A star of about the eighth magnitude (No. 30 of the same zone) is within a few minutes of the variable, and may readily be compared with it. The phenomenon of the variation is consequently a striking one, even as seen in a small telescope. The approximate place of the variable for 1881 is in R.A. 0h. 51m. 48s., Decl. +81° 14′·1.

EDMUND C. PICKERING

Harvard College Observatory, Cambridge, U.S., October 2

LORD LINDSAY'S Dun Echt Circular, No. 10, which I received on Saturday morning, October 23, prepared me to watch for a probable minimum of M. Ceraski's remarkable variable star B.D. + 81°.25′ on the same night. From my observations the minimum appears to have occurred at about 11h. 10m. G.M.T., the star then being of about 9·1 magnitude. At 9h. 5m. I noted it about equal to a neighbouring star, B.D. + 81° 30′, which I gauged 8·1 mag., and at 13h. 50m. it had regained the same magnitude. When about minimum I thought the variable to be slightly ruddy, but as it brightened up again it lost this tint and appeared to be white, or bluish white, as when I first observed it. It has a small bluish 11½ mag. companion, the P. and D. of which I roughly estimated to be 60° and 10″ respectively. The star was observed by Carrington in 1855, on December 19, 21, and 30, his estimated mags. being 8·0, 8·0, 9·0. Possibly the star may have been near minimum at his third epoch.

Knowles Lodge, Cuckfield, October 25 GEORGE KNOTT

"Solid Ice at High Temperatures"

THE interesting results announced by Prof. Thomas Carnelley, of Firth College, Sheffield, in relation to the physical conditions under which *ice* persistently maintains its *solid state* when exposed to the influence of heat (NATURE, vol. xxii. p. 435), deserves some notice. When he speaks of obtaining "solid ice at temperatures so high that it was impossible to touch it without *burning* one's self," it is evident that this *burning quality appertains to the hot vessel containing the ice, and not to the solid ice itself.* For it is obvious that under the given conditions *the temperature of the surface of the ice is kept at least as low as* 0° C. *by the rapid vaporisation of it while in a solid state.*

The phenomenon of a body remaining persistently at a low temperature when surrounded by a hot vessel—through the influence of the rapid change of state—is analogous to the well-known results of Boutigny and Faraday in relation to the freezing of water and mercury in a hot vessel by means of large