count of a new Entozoon from the coeca of *Struthio molybdophanes*, Rchw. This Nematoid (*Sclerostoma struthionis*) is figured on Plate 8.

A title-page and table of contents and index accompany the October part.

Solutions of Weekly Problem Papers. By the Rev. J. J. Milne, M.A. (London: Macmillan and Co., 1885.)

IN our notice of the "Weekly Problem Papers" we gave an account of the contents, and accorded to the collection a warm welcome. In the meanwhile we have gone through the major part of the papers, and have found the questions to be well suited for their purpose: here and there may occur occasional apparent exceptions, but if these are exceptions, then were they also in the original papers in which they occur.

The solutions are neat, and in several cases elegant, and in all the object of "increasing a student's stock of mathematical knowledge, and of teaching him to put it to a practical use" is well kept in view. Mr. Milne is prodigal in his solutions, as not unfrequently he gives two solutions of the same question. To compensate for the non-insertion of solutions already printed in the collections of Answers to the Tripos questions of 1875 and 1878, Mr. Milne appends a collection of an equal number of questions of a similar character, with their solutions; these, with two appendices, occupy about one-fifth of the whole volume. The two notes are on the geometrical theory of envelopes and geometrical maxima and minima.

We congratulate Mr. Milne on having so successfully carried out his design. We believe it was originally in his plan to trace each question up to its original proposer, but this very difficult task he has apparently abandoned, at any rate he makes no sign in this first edition.

The two books together will be of great service to students who cannot afford to read with a private tutor, as the solutions are written out in proper style, and are as full in explanation as a student could expect them to be. There is a long list of errata, but of these the greater part are due to the original papers. We have noticed several more, but this is not the place for indicating them, as the student will in most cases be able to detect them himself.

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 insure the appearance even of communications containing interesting and novel facts.]

Heat Quantities

IT would be a great advantage if some definite and generally-accepted meaning were attached to the words "capacity for heat," "thermal capacity," and "specific heat." As it is I find that scarcely two text-books give the same definitions of these quantities. The French writers, Verdet, Jamin, Fourier (Freeman's translation), and Deschanel (Everett's translation), seem to agree in considering specific heat a quantity of heat; so also do B. Stewart and Daniell. Prof. Everett, in "Units and Physical Constants," defines thermal capacity as a quantity of heat, and on p. 79 says that specific heat is also a quantity of heat, while on p. 80 he points out that it is of zero dimensions. In Maxwell's and Garnett's books it is pointed out that specific heat is a ratio, but in the latter the term is used loosely later in the book. Glazebrook and Shaw, in their "Practical Physics," make it a ratio.

To avoid all this confusion, I would propose the following definitions, on the analogy of the accepted ones for density and specific gravity:—

"Capacity for Heat.—The quantity of heat required to raise

the temperature of any body, under given conditions, by 1°C. , is called its 'capacity for heat' under those conditions.

"Thermal Capacity.—The quantity of heat required to raise the temperature of unit mass of any material, under given conditions, by 1°C. , is called its 'thermal capacity' under those conditions.

"Specific Heat.—The ratio of the thermal capacity of any material to the thermal capacity of some standard material is called its 'specific heat.' This standard material is usually water at 0°C. or 4°C. "

If some such definitions as these were generally accepted, a good deal of confusion would be avoided, and the analogy with density and specific gravity would be accentuated. At the same time the word "specific" would be defined to mean that the quantity to which it was applied was a ratio, and of zero dimensions.

HARRY M. ELDER

Wellington College, Wokingham

Permanent Polarity of Quartz

THE second note in NATURE (Feb. 4, p. 325) contains an account of an "important discovery" by Dr. O. Tumlirz, which is wrong in all essential particulars. The permanent polarity discovered by that gentleman is not diamagnetic, but paramagnetic. Nor is it correct that "Dr. Tumlirz appears to think that these facts negative Becquerel's theory of diamagnetism," but on the contrary, he takes some trouble to show that his experiments are in complete agreement with that theory.

"Becquerel's theory (1850)" seems to be a name for the one discussed, though not adopted, by Faraday in his second paper (1845) on the subject, that all matter is magnetic, the medium occupying an intermediate position between so-called paramagnetic and so-called diamagnetic bodies.

ARTHUR SCHUSTER

[Dr. Tumlirz's own words are: "Der Bergkrystall ist hiermit der erste diamagnetische Körper der eine dauernde Polarität zeigt."—Ed.]

Variegated Iridescent Halo

ABOUT noon of January 28 the sky was overcast by a horizontal cloud, and an iridescent halo appeared directly beneath the sun. The length of the arc was not measured, but appeared to be nearly or quite 90° . The most of the halo was of a bright yellow colour, but not far from the middle of the arc was a spot of green separated on each side from the yellow arcs by a short neutral tract. The green spot was nearly round, and its breadth (as measured from the sun) was nearly the same as that of the yellow arcs, and the angular distances from the sun of both the yellow and green arcs were approximately equal. Iridescent halos are seen here every year, usually as complete circles about the sun, and often showing all or several of the prismatic colours, each forming its own definite ring at different distances from the sun. Such halos appear through a thick haze, or quite thin cloud. This variegated halo appeared through a cloud so dense that the position of the sun could barely be made out by the eye, and it was of very variable density. The borders of the coloured arcs were not clearly defined, and apparently the light had been somewhat scattered by reflection upon the lower cloud particles. The temperature was several degrees below the freezing-point of water. Twice before during the present winter short monochromatic arcs of halos have appeared, once a yellowish-green, once a bright red.

The iridescent clouds recently seen by so many of your correspondents in Scotland appear to be, in part at least, the same phenomenon as here recorded, only in this case there was enough of the arc visible to definitely show that the colour was due to an iridescent halo.

G. H. STONE

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White Rainbows

PROBABLY A. E. E. will find some answer to his questions in the under-mentioned articles:—R. Smethurst, "Account of a White Solar Rainbow" (*Mem. Phil. Soc., Manchester*, iii. pp. 176-78, 1819); Aug. Bravais, "Observations sur le Phénomène de l'Arc-en-Ciel blanc" (*Proc. Verb. Soc. Philom.*, pp. 33-35, 1846; *Ann. de Chimie*, xxi. pp. 348-61, 1847); F. Moigno, "Nouvelle Théorie de l'Arc-en-Ciel blanc" (*Moigno, Cosmos*, i. pp. 107-11, 1852-53); G. J. Symons, "On