

dry- and wet-bulb temperature, relative humidity, cloudiness, sea-surface temperature, strength of current, and rainfall, with notes of any unusual phenomena, including the appearance of albatrosses and schools of dolphins or flying-fish. The charts included with the publication show the salinity and temperature in depth sections, the one for Mogador giving salinity, temperature, and density separately. The salinity seems to decrease southwards, and also generally with increasing depth.

THE March number of *Terrestrial Magnetism and Atmospheric Electricity* contains a summary, by Mr. J. P. Ault, of the results of the magnetic survey of the Atlantic made by the *Carnegie* during her voyage from Washington to Dakar, West Africa, and Buenos Aires during the autumn and winter. While the values found for the magnetic dip differ often by two or three degrees from those given in the last Admiralty Charts 3598, 3603, and 3775, the values of the observed deviation of the compass to the west differ by more than a few tenths of a degree from the charted values in certain limited regions only. Thus in the region between the Gold Coast and the Island of Ascension the Admiralty Chart gives the deviation to the west about one degree too large, and between Trinidad and Buenos Aires there is a considerable area in which the deviation is given too small by the same amount.

OWING to the decrease in research at Harvard during the war, vol. xiii. of Contributions from the Jefferson Physical Laboratory covers the three years 1916-7-8, and at least a third of the volume is devoted to Dr. P. W. Bridgman's work on the effects of pressure on the electrical resistance and thermo-electric properties of more than twenty metals. The pressures used reach 12,000 kilograms per sq. cm., and the temperature ranges between 0° C. and 100° C. With the exception of wires of bismuth and antimony, the resistances of metallic wires subjected to hydrostatic pressure decrease with the pressure, following a linear law approximately, and at 10,000 kilograms per sq. cm. have values about 99 per cent. of their values at atmospheric pressure in the case of cobalt and tungsten down to about 90 per cent. in the case of lead, tin, and cadmium. The temperature-coefficient of resistance remains almost unchanged. The effect of pressure on the thermo-electric properties is much more variable. The normal effect is to increase the thermo-electric power of the metal, but in three out of the twenty metals tried this is not the case. In most cases both the Peltier and the Kelvin effects are increased, but there are many exceptions. The author considers that the electron theory is quite incapable of explaining these results.

WE have received from Messrs. C. Baker, High Holborn, W.C., their classified list (No. 69) of second-hand scientific instruments. The list includes microscopes and accessories, telescopes and field-glasses, spectrosopes, surveying, astronomical, projection and physical apparatus, and contains particulars of more than 2000 pieces of apparatus. In these days of high prices intending purchasers would be well advised in the first place to consult Messrs. Baker's catalogue.

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### Our Astronomical Column.

MERCURY AN EVENING STAR.—The greatest elongation of Mercury (E. 25° 41') occurs on June 29. On June 24 the planet will set at 9.54 G.M.T., or 1h. 34m. after the sun, and may possibly be detected close to the W.N.W. horizon by anyone with a good eye. A field-glass should render the planet distinctly visible about an hour after sunset.

THE ZEEMAN EFFECT IN FURNACE SPECTRA.—In continuation of his well-known researches on furnace spectra, Mr. A. S. King has recently been investigating the Zeeman effect for iron and vanadium in the electric furnace. Observations of the effect of a magnetic field on spectra have up to the present been chiefly confined to spark spectra, so that it is interesting to compare the effects when different sources are used. The electric furnace possesses, in addition, certain advantages over spark spectra for this purpose, since most of the low temperature lines are much more readily examined. Also, the inverse effect for absorption spectra is easily obtained by introducing a graphite plug to give a background of continuous spectrum. A description of the apparatus and results is given in the *Astrophysical Journal* for March. The furnace tube was placed parallel to the lines of force in a field varying from 6500 gauss in the centre to 9000 gauss near the ends, and observations were made of one hundred iron lines and ninety vanadium lines. The results of these preliminary observations seem to show that the effect is independent of the source used, since the observed separations agree both in character and magnitude with those of corresponding spark lines.

THE LUNAR PARALLAX AND RELATED CONSTANTS.—There is a set of quantities (the radius and figure of the earth, the intensity of gravity, the moon's parallax and the motion of her perigee and node) which are so intimately related that an alteration in one compels corresponding alterations throughout. Prof. W. de Sitter has endeavoured to obtain a mutually consistent series of values, and gives the results in vol. xvii. of the Proc. of the Royal Academy of Science, Amsterdam. It is impossible in a brief note to do more than give his conclusions.

Mean radius of earth—i.e. radius in geogr. lat. the sine of which is  $\{\frac{1}{3}\}^{\frac{1}{2}}$ —=6,371,237 metres.

Value of gravity at that latitude (unaffected by centrifugal force), 9.82014.

$$\pi^1 = \text{sine moon's parallax/sine } 1'' = 3422.544''.$$

Compression of earth, 1/296.0.

Constant of precession, 50.250"; luni-solar precession, 50.373". Mass of moon, 1/81.50

$\frac{C-A}{C} = 0.0032775$ ; where C, A are the principal moments of inertia of the earth.

Also, if A', B', C' are the three principal moments of inertia for the moon, and

$$\alpha = \frac{C' - B'}{A'}, \quad \beta = \frac{C' - A'}{B'}, \quad \gamma = \frac{B' - A'}{C'},$$

$\beta$  is found to be 0.000626, and  $f = \frac{\alpha}{\beta} = 0.92$ .

This value of  $f$  is much larger than those previously found, which ranged from 0.49 to 0.75. In other words, the present paper makes the moon's equator less elongated towards the earth than previous determinations.

Prof. de Sitter's investigation reminds us of the late Prof. Harkness's "solar parallax and related constants." By a combination of all available evidence he deduced, nearly thirty years ago, a value of the solar parallax practically identical with that now accepted.