and irregular as that of *Apus* in many parts of the world.

From the accumulated records one can not but be convinced that *Craspedacusta* and its alternative generation are much more common and widely distributed in the fresh waters of the eastern and eastern central United States, at least, than heretofore believed, and that continued and careful examination of particular bodies of water over a period of years will prove this to be the case.

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THE MAGNETO-OPTICAL EFFECT AND THE ZODIACAL LIGHT

IN SCIENCE for October 21, 1927 (Vol. 56, page 376), Dr. Elihu Thomson publishes a new hypothesis to explain the zodiacal light. Some years ago he noticed that the particles of iron from the smoke of an arc were oriented by a magnetic field, so as to reflect light strongly in certain directions. He suggests that the zodiacal light may be due to particles of iron oriented by the earth's magnetic field.

The zodiacal light is a faint illumination seen in the west just after twilight, or in the east just before dawn. It is always centered on the ecliptic, or plane of the earth's orbit, being brightest just above the haze which nearly always dims anything seen near the horizon. The brighter portions of the zodiacal light are distinctly more brilliant than the milky way. Spectroscopic tests indicate that it is simply sunlight, and it is fifteen or twenty per cent. polarized, as would be expected after reflection.

The generally accepted hypothesis may be summed up in Moulton's words "It is universally agreed that the zodiacal light is due to a great swarm of small bodies, or particles, revolving around the sun near the plane of the earth's orbit. These small bodies are in reality planetesimals which have not been swept up by the planets, ..." The new Russell-Dugan-Stewart text on astronomy presents this hypothesis with the introductory statement "The observations make it almost certain that . . . ."

Although ordinarily not seen to extend more than ninety degrees from the sun, tests at Mt. Wilson have shown that some illumination extends over the entire sky. Keen eyes can, under the best conditions, discern a faint patch of light at the point on the ecliptic directly opposite the sun. This is known as the gegenschein. The swarm of small bodies must extend in appreciable numbers well beyond the earth's orbit. Particles opposite the sun would be seen at the "full" phase, like the full moon. The gegenschein is further explained by the fact that the combined attraction of the earth and sun tends to concentrate such particles in a sort of dynamic whirlpool about a point nearly a million miles outside the earth's orbit.

The fact that iron lines are conspicuous in the solar spectrum, and that iron is an important constituent of meteorites, suggests that iron particles may be numerous among those reflecting to us the zodiacal light, but the following observational evidence indicates that Dr. Thomson's effect is unimportant.

(1) The zodiacal light is most conspicuous just outside of twilight, perhaps 30 degrees to 40 degrees from the sun, and ordinarily fades into invisibility before 90 degrees is reached. The Thomson effect would produce the glow at 90° to 150° from the sun.

(2) The zodiacal light is always seen along the ecliptic, or plane of the earth's orbit. The orbits of all the major planets are nearly in this plane. The Thomson effect depends on the earth's magnetic field, and so, in general, would not follow the ecliptic.

(3) As the earth's shadow extends to more than three times the distance of the moon, the gegenschein, or glow at the point opposite the sun, must be produced by particles which are presumably too distant to be oriented by the earth's magnetic field. Particles as near as the moon would, in that direction, be within the shadow of the earth and, therefore, invisible.

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THE INDIGENOUS NATIVE POPULATION OF ALGERIA IN 1926[1]

IN a recent book[2] the indigenous native population of Algeria was studied in considerable detail, as the only example known to me of a human population which had virtually completed an entire logistic cycle of growth within the period of census taking. To the counts of this population made by the French between the years 1851 and 1921 inclusive, there was fitted, by least squares, the logistic curve

$$y = 2.238 + \frac{3.141}{1 + e^{1.2059 - 0.4232x}} \qquad \text{(i)}$$

with the results shown in Table 1 for the years 1881 to 1921 inclusive, during which period the observed figures may be regarded as substantially reliable.

There have now come to hand[3] the results of the 1926 census of Algeria. It appears that the indige-

[1] From the Institute for Biological Research of The Johns Hopkins University.

[2] Pearl, R. The Biology of Population Growth. New York (Alfred A. Knopf), 1925. Pp. xiv + 260.

[3] *Jour. Soc. Stat. de Paris*, November, 1927, p. 291.