

in the capillary tube, but the ζ Puppis lines were not observed.

The positions of the observed lines of the Principal series are 4685'98, 2733'34, 2385'47, and 2252'88, all of which are slightly more refrangible than the wave-lengths calculated by Rydberg. Using oscillation frequencies *in vacuo*, the lines are represented by the equation

$$n = 48764 \cdot 0 \frac{109675}{(m + 0 \cdot 999506)^2}$$

where m has the values 1, 2, 3, 4. The wave-length of the first line sufficiently justifies its identification with the high-level line 4685'90 in the chromosphere (Lockyer), the nebular line 4685'73 (Wright), the Orion star line 4685'4 (Pickering), and probably also with 4688 of the bright line stars.

The new ultra-violet series includes strong lines at 3203'30, 2511'31, and 2306'20, which may be connected by the equation

$$n = 48763 \cdot 8 \frac{109675}{(m + 0 \cdot 499506)^2}$$

where m has the values 2, 3, 4. The limit is identical with that of the Principal series, and the new lines are provisionally regarded as forming a second Principal series. Hydrogen is apparently unique in having two Principal series so related. It has so far only been possible to identify three members of the ζ Puppis series, their approximate wave-lengths being 5410'5, 4541'3, and 4200'3.

The investigation is regarded as giving another indication of the probability that there are no special kinds of matter in celestial bodies, and that most of the celestial spectra are reproducible in laboratory experiments.

PELLAGRA.

THE announcement, a few weeks ago, that pellagra has been found in the British Islands is of no slight importance. For, if half-a-dozen genuine cases have been found, we may be fairly sure that many hundreds are waiting to be found. In the United States, it is only five years since Dr. Babcock and Dr. Watson directed general attention to the presence of this disease in their country. We now have clear evidence that pellagra has been found in no fewer than thirty-five States; and several thousands of cases have already been found and noted. In the final stage, the central nervous system is affected, and the patient is apt to become insane; it is possible, therefore, that many cases will be found, by diligent examination, among the inmates of asylums. Still, we have no reason to believe that pellagra has ever been, or will ever be, so heavy on this country as on Italy.

Out of the admirable work done by the Pellagra Commission (1909) came Dr. Sambon's theory that the disease is one of the insect-borne infections, and that the infecting agent is *Simulium*, one of the "midges." It is a not improbable corollary, with some direct evidence in its favour, that the organism of pellagra is a

protozoon, similar in nature to the protozoon of malaria.

Against this theory, based on long and laborious study of the districts where pellagra lies heaviest on the people, there is the old theory that the disease is due to the eating of unwholesome maize: that some bacterial change in the maize causes it to act as a slow poison. Perhaps, in a few years, these opposed theories, which now seem utterly irreconcilable, may be brought nearer together by a new series of observations, at some level which is not yet in sight. Meanwhile, in the general opinion of experts, the old theory—that bad maize, *ipso facto*, induces pellagra—is losing ground. One is reminded of the old theory that the eating of the manioc-root was the cause of the African sleeping-sickness; and one is tempted to think that the maize-theory of pellagra will have the same fate.

Certainly, if a notable number of cases of the disease be found in this country, the maize-theory will become even harder to hold.

The earliest full account, in our language, of the disease is probably the paper by Dr. Sandwith (Brit. Med. Ass. Edinburgh meeting, 1898). His study of pellagra in Lower Egypt is well known to all pathologists. For the facts about pellagra in the United States we have Dr. Niles's recent book, "Pellagra: an American Problem" (Saunders, Philadelphia, 1912), and, with much other literature, two important papers in the *Transactions of the Society of Tropical Medicine and Hygiene* (January, 1912), by Dr. Stannus and Dr. Sandwith, with a discussion, in which Dr. Sambon and Dr. Chalmers took part. The reference to pellagra in the British Islands is *British Medical Journal*, October 26, 1912.

It is fairly certain that careful collective investigation will bring to light many cases of pellagra in this country, and the experts will perhaps be enabled thereby to set aside the "maize theory," and all modified forms of that theory, and to class the disease with malaria, yellow fever, and sleeping sickness. Still, it is not impossible that the maize theory and the *Simulium* theory may, by further study of the facts of the incidence and geographical distribution of the disease, be found less hostile to each other than they appear to be at the present time.

NOTES.

WE heartily welcome the new Society for the Promotion of Nature Reserves. Its objects, as officially stated, are as follows:—(1) To collect and collate information as to areas of land in the United Kingdom which retain their primitive conditions and contain rare and local species liable to extinction owing to building, drainage, and disafforestation, or in consequence of the cupidity of collectors. All such information to be treated as strictly confidential. (2) To prepare a scheme showing which areas should be secured. (3) To obtain these areas and hand them over to the National Trust under such conditions as may be necessary. (4) To preserve for posterity as a