ciated in aqueous solution than is KOH, or

b. That the diffusion constant of KOH in the hypothetical non-aqueous medium bounding the protoplasm is 50,000,000 times that of KCl, or

c. That the two factors combined account for the 50,000,000-fold difference.

Such assumptions would be purely *ad hoc* and without experimental basis or parallel.

(4) Until 2 and 3 above are satisfactorily explained the molecular hypothesis must be regarded as untenable.

The detailed answer to Osterhout's criticism and a fuller explanation of the above points will be published in another journal.

S. C. BROOKS

DEPARTMENT OF ZOOLOGY,
UNIVERSITY OF CALIFORNIA

A CURIOUS COLOR PHENOMENON

WHILE experimenting with an intermittently flashing neon discharge tube, the writer observed a phenomenon which may thus far have escaped being reported, if not observed, by others. He has demonstrated it to a number of persons, all of whom agree upon the description of what they perceive. Whether the effect is subjective or objective is not definitely established, but it appears to be purely objective.

A neon tube about 4 meters long, made of 8 mm glass tubing, is bent in the shape of a grid, so that a rectangular area 25 x 35 cm is covered by the parallel portions of the tube, which are spaced about 2 cm between centers. The tube is supported in a frame-like box, backed by a reflector, and covered in front by a ground glass panel. The illumination from the tube is somewhat diffused, but the shape of the tube is distinguishable through the ground glass. The tube is flashed by the high voltage from the secondary of a transformer, giving about 10,000 volts maximum when a direct current through the primary circuit is interrupted. A mechanical device is employed to make and break the primary at any desired frequency up to twenty-five per second.

At the upper frequencies, the light appears nearly continuous, the color being that which has become so familiar through the neon advertising sign. As the frequency is gradually decreased, flickering becomes pronounced at about twenty flashes per second, without change in color. The duration of the flash is very short, but its time has not been determined. If the observer looks directly at the ground glass when the frequency reaches twelve or ten flashes per second, there appear around the edges of the screen bright fringes of color—blue, green, bright red and yellow—colors quite different from the normal color of the tube. The interplay of colors becomes more striking as the frequency is further decreased. They shift and dance about, and at a frequency of about seven they flash and flicker over the entire illuminated screen, with the regular neon color predominating as a background. The colors observed are vivid and unmistakable. At a frequency of three or four flashes per second the varying colors disappear and only the characteristic neon color remains.

If an electric fan is set in operation in front of the "neon screen," and the frequency of flashing adjusted so that there is apparently slow rotation of the fan, the edges of the blades are outlined with the "dancing" colors. The colors observed do not appear in the lines of the spectrum.

A neon tube bent in the form of a flat spiral, and without a ground glass diffusing screen, has been found to give similar effects.

PAUL E. KLOPSTEG

CENTRAL SCIENTIFIC CO.,
CHICAGO, ILLINOIS

THE AUTO-TRACTION HYPOTHESIS OF CRUSTAL DYNAMICS AND MECHANICS

THE department of geology, University of Manitoba, has a paper in the press which presents a preliminary outline of an hypothesis of crustal dynamics and mechanics. It introduces the conception of a sheet-flow in the crust of the earth, similar to that in ice-sheets. It calls into play the translation of all available geological energy into the great forces that have effected the geological changes of the past and elucidates a mechanism that seems to throw new light on most of the major crustal phenomena.

The paper will be issued shortly in pamphlet form as a contribution from the department of geology, University of Manitoba, Winnipeg. Any one interested in the hypothesis may communicate with me at this address and a copy of the paper will be mailed as soon as it comes from the press.

J. S. DELURY

SCIENTIFIC BOOKS

Atlas Céleste. By E. DELPORTE. Cambridge University Press, London; Macmillan, New York, 1930.

LAST year Dr. Delporte, of the Royal Astronomical Observatory at Uccle, Belgium, set down new boundaries of the constellations as arcs of hour circles and parallels of declination. He did this work at the recommendation of the International Astronomical Union. Its successful completion was a remarkable example of international cooperation. This work

was accompanied by star charts on which the new boundaries were drawn.

It has been a happy idea to use these beautiful charts in the star atlas, which is the subject of the present review. The twenty-six charts covering the whole celestial sphere contain the stars brighter than magnitude 6.5. They are not overcrowded and the distinction between brighter and fainter stars is so well made that the appearance is unusually clear. The stars are drawn for equator and equinox of 1875.0 for the technical reason that the newly adopted boundaries were defined in this system. This led to the advantage that very little had to be changed in the southern hemisphere where Gould defined the boundaries.

The twenty-six charts are all printed on the right-hand pages. On the corresponding left-hand pages the positions of all stars, brighter than magnitude 4.5, are listed for 1875.0 and 1925.0. This feature makes it possible to obtain the positions at any other date with great ease. The magnitudes and spectral types of the stars are also given. On the same page we find separate lists of the more important variable stars, double stars, star clusters and nebulae.

The description of the boundaries is not given in this atlas. For these one has to use Dr. Delporte's "Délimitation Scientific des Constellations" or Professor Schlesinger's "Bright Star Catalogue." In an appendix to the latter the new boundaries are listed in a different way, which is at the same time simpler and more efficient

Dr. Delporte's "Star Atlas" is a useful guide at the telescope at a very moderate price. It is highly recommended to every student, amateur and professional astronomer.

The fact that the book has a French title ought not to frighten any one, as the text consists exclusively of astronomical symbols of an international character.

DIRK BROUWER

YALE UNIVERSITY OBSERVATORY

Lingnan Science Journal (continuation of *Lingnaam Agricultural Review*), Vol. VII and Nos. 1 to 4 of Vol. IX. Printed by the Commercial Press, Ltd., Hongkong, 1931.

UNLESS one has made a careful and very recent study of Chinese affairs, and unless one knows China, one is apt to think of that country as in a state of disorganization that has lasted for years and that has disrupted government, commerce and education to an appalling degree. With a knowledge only of the newspaper headlines, and not taking into consideration the great size of that country and the rather primitive means of communication, one does not realize that life goes on uninterrupted in great regions, and that, while battles may be fought in an adjoining province and while banditry may exist in the next town but one, work is going on steadily in literally thousands of communities.

In this way they have been going on at Lingnan University. This institution, formerly known as Canton Christian College, has been in existence for forty-three years. Since the Boxer rebellion, it has been located on Honan Island. This is an island formed by two branches of the Pearl River and is about two and a half miles from Canton proper, communication being by boat. The university is a private institution, is non-denominational and coeducational. In 1928 a new Science Hall was built, having been financed by the Rockefeller Foundation and by Mrs. Willard Straight.

Volume VII of the *Science Journal* is the first of two volumes of the proceedings of a science conference held on the occasion of the formal opening of the new science building which is called Willard Straight Hall, on October 19, 1928. Volume VIII will appear shortly, including the rest of the proceedings of that conference. Four parts of Volume IX, with miscellaneous contents, have been published in advance of the appearance of Volume VIII.

The proceedings of the formal opening seem to have been of very great interest. Volume VII covers more than 800 pages and carries several plates. The contents are extremely diverse in character. The larger number of papers, however, relate to biology. Contributions had been invited from naturalists in different parts of the world, and the papers are therefore sound and important.

Volume IX shows that there is being published a journal that can not be ignored in scientific circles. The papers in Nos. 1 and 2 include among the subjects treated ornithology, entomology, botany, parasitology, chemistry, meteorology, forestry and anthropology. There is a department entitled "Books" that gives reviews of important volumes, and also a department of "Abstracts."

There is also a department headed "Scientific Notes" that bids fair to become of much importance. It contains short signed notes on differing topics, and the last number added to it a section entitled "General Notes."

Lingnan University is especially strong in scientific work, biology, chemistry and agriculture being emphasized. The journal is sent in exchange for several hundred scientific journals to various countries, and fits in with the plan of the university to establish one of the largest scientific libraries in China.

It is probably unnecessary to add that the journal is published in the English language. I am told by Dr. William E. Hoffman, the chief editor, that nearly