suggests that the virus of distemper when "hybridized" with the tissue of the dog (splenic pulp) is a distinct immunological entity from the same virus hybridized with the tissue (splenic pulp) of the ferret.

In this new approach due consideration should be given to the fundamental biological laws. For example no essential difference should be recognized as existing between the rapidly growing invading organism and the equally rapid growth and development of the cells of the host during the height of invasion. Just as the bacterial agents in process of their metabolism produce certain agents injurious for the host, it is likely also that those cells of the host at the site of invasion produce metabolic products that are injurious to itself. If these bacterial products by virtue of their nature as proteins, are able to lead to the production of specific interacting substances demonstrable by certain physico-chemical phenomena, *e.g.*, agglutination and precipitation, then it might be equally true that certain toxic products of the invaded cells of the host, by virtue of their protein nature, or, as likely, by their ability to act as haptenes to the main protein radicle involved in the chemical reaction, would lead also to the production of certain specific substances interacting either with the composite antigen or with the haptene group derived from the host cells.

If this newer conception be correct, then recovery from infectious disease is due to the development of neutralizing substances to the foreign proteins in the tissues and blood of the infected individual which result not only from the invasion and growth of the bacterial invader but also from the cellular destruction in the host. Such foreign proteins from the host being antigenic for the same species is not just a hypothetical possibility, as it has already been demonstrated by Landsteiner[4] to be true in the case of homologous tissue protein (serum albumin) treated with formaldehyde, nitrous oxide and other chemical agents.

Thus it seems altogether desirable that future investigations dealing with the production of therapeutic agents in diseases of bacterial origin, should develop along lines directed at establishing conditions similar to those that govern the interaction between the invading organism and the host, such as for example the production of the essential features of the disease in lower animals, followed by the utilization of such material from the involved tissue as a composite antigen to be used in the production of antisera. It is to be hoped that future experimental evidence will show that such antisera contain readily available neutralizing substances directed at the dual toxemic products of both bacterial and tissue destruction that result in the course of these bacterial infections.

THEODORE J. CURPHEY
HERMAN B. BARUCH
UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE,
NEW YORK, N. Y.

[4] Landsteiner and Jablous, *Z. Immunitat.*, 20: 618, 1914.

RUMBLING CLOUDS AND LUMINOUS CLOUDS

A BRIEF description of two rather unusual cloud phenomena which have come to my notice may be of some interest. One of these was observed from the east shore of a narrow bay of Cache Lake in Algonquin Park, Ontario, on an early morning during the latter part of July of this year. It was a chilly morning and the sky was completely overcast with clouds. My attention was attracted by a rumbling sound coming from the west, such as heralds the approach of a heavy thunder storm. As I watched, a very long, low, narrow, tenuous cloud, resembling a squall cloud, appeared above the trees on the opposite shore, moving at right angles to its length. The continuous, rumbling noise, now grown remarkably loud, seemed to come unmistakably from this cloud, whose cross-sectional diameter was only about 200 feet. The cloud passed overhead eastward and was not followed by the expected rain storm. The cloud apparently marked the meeting place of two oppositely directed currents of air that differed in temperature. It seems almost incredible, however, that so much sound could have arisen from the agitated air alone, and yet this seems to be the only plausible explanation of its origin. I steadfastly looked for small lightning flashes in the cloud and saw none, although they would have had to come in rapid succession to produce the persistent sound which was heard. The noise could not have come from the rattle of hail because the cross-section of the cloud was too small to give time for hail formation; and in any case no hail fell.

The other cloud I wish to describe was a solitary, brightly luminous, cumulus cloud which I saw on a clear summer night at Hutchinson, Minnesota, some thirty-five years ago. The cloud had a horizontal diameter of about a third of a mile and a thickness of about one fourth of that distance. It rose majestically from the eastern horizon, shone with a uniform, steady, vivid, whitish light and passed directly over the town. When the cloud was overhead a great shower of insects descended to earth covering the ground all around to the number of about 50 to 100 per square foot. These insects proved to be a species of hemiptera and were non-luminous. They had apparently been induced to take wing by the bright object in the sky. I have been at some loss to account

for the luminosity of the cloud. It could not have been due to reflected light coming from a city. It might be postulated that the cloud consisted of a mass of organic vapor that was slowly oxidizing, being in fact a case of an extended will-o'-the-wisp, but for several reasons this seems to be an unlikely hypothesis. At the time the cloud was observed, it was thought to be far too late in the evening for its light to be reflected sunlight. There is a possibility that a bright moon below the horizon might have been the source of the light, although I have no recollection of having seen the moon rise later.

JOHN ZELENY

SLOANE PHYSICS LABORATORY,
YALE UNIVERSITY

ENTOPTIC COLORS

I WAS extremely interested in reading the description of the phenomenon reported by Mr. Paul E. Klopsteg, which he observed in his neon tube experiments. I have observed for some considerable time what I believe to be the same thing, only obtaining it in a different manner. I am an amateur movie enthusiast, and from time to time in setting up my projector I have had occasion to run it without any film, with the light shining against a white screen and at varying speeds. I have noticed that at a certain speed which is somewhat less than the standard speed of 16 per second there is a very decided color phenomenon present. This effect is very difficult to describe, as it appears to be a mixture of flashes of the various colors mentioned by Mr. Klopsteg. I should say also that the frequency would probably be about 10 or 12 per second.

The first time the phenomenon was observed I was undecided as to whether there was a defect in my visual apparatus, but inasmuch as it can be produced at will I came to the conclusion that it was perfectly normal. If, as Mr. Klopsteg suggests, this phenomenon offers an opportunity for some original work, the thought is suggested to serve that my observation might prove of value, inasmuch as a different method of production is used. The illumination used is the regular incandescent lamp which gives a somewhat whiter light than the ordinary incandescent bulb and has a concentrated filament, but otherwise is quite standard.

ELMER F. WAY

INDUSTRIAL LABORATORIES,
GRAND RAPIDS, MICHIGAN

THE PREVENTION OF CONVULSIONS

IN connection with an item under *Science News* entitled "Sunshine and Cod Liver Oil for the Prevention of Convulsions," which appeared in SCIENCE, March 20, 1931, I wish to draw attention to the fact that in a series of experiments conducted at University College Farm, Dublin, on calcium metabolism in the pig, convulsions appeared in a group confined on a non-vitamin D diet, to a compartment lighted through window glass. Similar groups getting vitamin D did not develop convulsions. The experiments are described in a paper published in the *Journal of the Department of Agriculture,* Dublin, Vol. 30, No. 1, from which the following abstract giving a description of a convulsive fit in the pig is taken:

> A pig suddenly developed a tremor which rapidly intensified, the animal arching its back and progressing backwards until impeded by some obstacle. In some cases the pig squealed as if suffering from intense pain and after a lapse of three to five minutes it fell prostrate to recover gradually in from seven to ten minutes after the onset of the attack.

The group of pigs which developed convulsions exhibited all the symptoms of an intensified form of rickets.

E. J. SHEEHY

ALBERT AGRICULTURAL COLLEGE,
DUBLIN, IRELAND

SOCIETIES AND MEETINGS

THE TEXAS ACADEMY OF SCIENCE

THE Texas Academy of Science held its annual meeting on November 27 and 28 at San Antonio, where it was the guest of the city and had its meetings in the Witte Memorial Museum through the kindness of Director Ellen S. Quillen. An extensive and varied program was given, which was divided into papers of like interest rather than into those representing any one of the sections of the academy. The section of the geology and its closely related sciences heard among other papers presented one on the "Silting of Lake Worth," by Dean T. U. Taylor, dean of engineering, University of Texas. Dr. E. H. Sellards, of the Bureau of Economic Geology, University of Texas, gave an account of the Texas earthquake, August 16, 1931. This is the first paper in which this earthquake, which was felt over much of Texas and adjacent states, has been reviewed. William Cunningham, of the department of chemical engineering, University of Texas, gave a full account of the sulphur industry of the Texas coast. This paper was perhaps the most enjoyed of any technical paper given at this meeting. From the standpoint of research into unknown fields the paper by Frederick A. Burt, of the Agricultural