

were respectively yellow and white. I also gave details of the accelerated production of wood alcohol and other fermentation products by irradiating the culture flasks with rays of selected wave-length in the visible spectrum.

I believe that while ultra-violet and infra-red light have almost unlimited physiological uses, a systematic study of the *visible* spectrum will reveal many narrow regions useful for promoting or inhibiting bacterial growth.

T. THORNE BAKER.

Dufaycolor Research Laboratory,
New York City, N.Y.
Nov. 27.

It should be remembered, in connexion with the work to which Mr. Thorne Baker refers, that the first communication upon this subject was published in *NATURE* of July 12, 1877 (16, p. 218) under the title "The Influence of Light upon the Development of Bacteria". The authors were Dr. (now Sir Arthur) Downes and T. P. Blunt, and a paper by them entitled "The Influence of Light upon Bioplasm" was read before the Royal Society in the following year. The experiments described were chiefly concerned with the effect of *visible* light upon various organisms.—Editor, *NATURE*.

A Curious After-Effect of Lightning

AN interesting observation was made during a thunderstorm which took place over Johannesburg on December 5. The storm, which was accompanied by rain, was the severest experienced for some years.

During the height of the storm, a particularly bright flash struck the ground about a hundred yards away; the flash appeared to be approximately a foot wide and to last for at least a second. After the flash had died away, there remained a string of bright luminous beads in the path of the flash. The beads, of which there were twenty or thirty, appeared to be about a quarter of the width of the flash, that is, say, three inches in diameter. The distance between the beads, which appeared to be nearly constant, seemed about two feet. They remained visible for approximately half a second; during this time they gave no indication of any movement.

Measurements were afterwards made to endeavour to check the above dimensions; they appear to be of the right order.

D. G. BEADLE.

Transvaal Chamber of Mines,
Johannesburg.
Dec. 11.

Points from Foregoing Letters

CONTRARY to expectation, the amount of γ -rays excited in cadmium by neutron bombardment is found by H. Herszfeld and Prof. L. Wertenstein to be independent of the thickness of cadmium traversed (between 0.1 mm. and 1 mm.) and even to decrease at greater thickness. From these and further experiments, using screens of lead, iron and aluminium, they conclude that the energy of cadmium γ -rays must be of the order of 10 million electron volts; this agrees with the value deduced from mass-spectrographic data rather than with that obtained by previous investigators from absorption experiments.

J. R. Tillman points out that the results of experiments on the scattering of slow neutrons depend on the method of detection of the neutrons. He finds that the beta-ray activity induced in iodine, silver and copper by neutrons (slowed down by paraffin wax) is increased by *different amounts* when the metals are backed with a further layer of paraffin. The results show that radioactivity in iodine is induced by neutrons which have velocities greater than those effective in copper, and probably greater than velocities corresponding to the temperature of the system.

Prof. K. Przibram directs attention to the discovery by O. Schauburger of a yellow light-sensitive rock salt from Hall in Tirol, showing all the characteristics of primary colouring by radiation. This yellow salt is the link, hitherto missing, in the formation of natural blue rock salt.

Photometric curves, giving the intensity of the hyperfine structure doublets of the resonance lines of potassium (of atomic mass 39), are submitted by D. A. Jackson and H. Kuhn. The component of shorter wave-length is the stronger in every case, from which it is deduced that the magnetic moment of the nucleus of K^{39} is negative.

The absorption spectrum of magnesium hydride in the ultra-violet has been studied by B. Grundström by heating the metal in hydrogen at 1,400° C. In addition to the band observed by means of the arc spectrum by Pearse at λ 2430, the author describes another band which he explains in terms of electron configuration and quantum mechanics, ascribing it to a transition from the ground-level $^2\Sigma$ to a hitherto unknown activated state.

A new method of measuring the particular type of deviation from the gas laws known as 'degeneracy', at very low pressure where the van der Waals' forces (due to interaction between the particles) have no influence, is indicated by Prof. A. van Itterbeek. The method consists in determining the viscosity of the gas at different temperatures and calculating therefrom the mean velocity of the molecules according to Stokes's formula. This has been done with oxygen at 293°, 90° and 72° K.; the value obtained for the mean velocity agrees with that deduced from classical theory.

If a particular factor cures certain symptoms, it does not necessarily follow that the disease was originally due to lack of that factor. C. A. Elvehjem and Aaron Arnold find that rats showing vitamin B₄ deficiency symptoms may be relieved by vitamin B₁. This is apparently due to the fact that the B₁ vitamin enables them to eat more of the purified synthetic diet, which contains sufficient vitamin B₄ as impurity to be effective.

Rat liver tissue is found by H. Blaschko and H. Schlossmann to use up adrenalin in the presence of oxygen. In the case of liver tissue extracts, the activity of adrenalin is halved after the uptake of one atom of oxygen, and practically abolished after the uptake of two atoms of oxygen per molecule of adrenalin.