the mechanism both of the normal photographic effect, and also the Herschel effect.

Further work with other photographic materials is in progress.

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Ozone as a Heating Factor in the Atmosphere

THE vertical distribution of temperature in the upper layers of the atmosphere as affected by ozone has been carefully calculated. Taking the vertical distribution of ozone as found by Götz, Meetham and Dobson, and using new absorption coefficients, it was possible to derive the energy absorbed in the course of one day. Four days were selected to show the yearly change.

The solar radiation below 3000 A. was assumed to be a black-body radiation of 5,910° K.; for all the other wave-lengths, the values given by Abbot were used.

Secondly, the nocturnal radiation has been studied. For each layer the absorption of radiation from the earth and from all the other layers, and the re-radiation of this layer have been calculated. The atmosphere was divided into six layers.

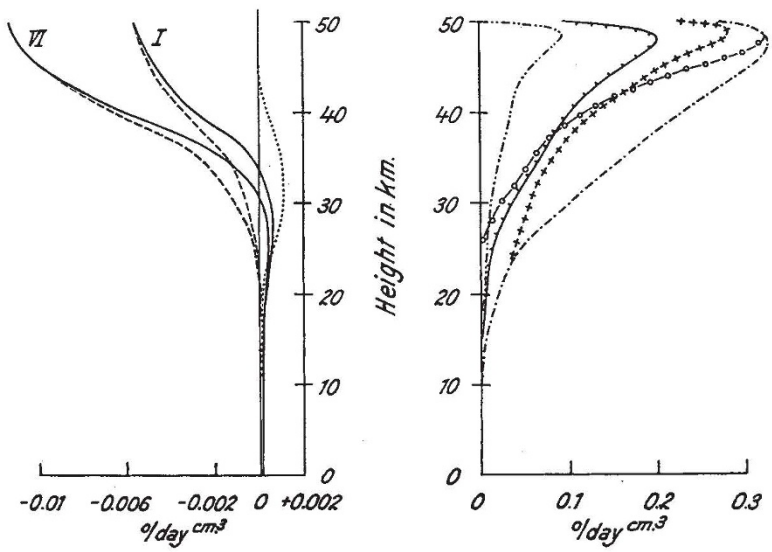

FIG. 1. Left. Cooling effect as affected by long-wave radiation. Two examples for different temperature distribution in the stratosphere are shown. Nocturnal radiation ———. Ozone radiation — — —. Terrestrial radiation . . . . . .
Right: Heating effect as affected by absorption of solar radiation. March 21 + + + + June 22 — · — · — · September 23 ┬┬┬┬ December 22 — · · — · · — · ·
Ultra-violet absorption only (for June 22) —o—o—o

The results are shown in Fig. 1. It is seen that the heating effect is about ten times the cooling effect at a height of 50 km. Below 25 km. no remarkable influence could be found. Despite the fact that the centre of gravity is situated at 25 km., the maximum lies at 50 km. This demonstrates the importance of an exact determination of the ozone concentration in the highest layers. The maximum corresponds to many assumptions on the constitution of the upper atmosphere.

The results summarized here will be published elsewhere in a more detailed account of these and other phenomena concerning atmospheric ozone.

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Value of the Acid Silver Nitrate Reaction as a Test of Ascorbic Acid

SZENT-GYÖRGYI observed that the suprarenal cortex reduces silver nitrate, and attributed this property to the ascorbic acid (vitamin C) which it contains[1]. Many workers have observed that this reaction disappears in scurvy and comes back if ascorbic acid is given to the scorbutic animal[2]; the reaction was also used for histological detection of vitamin C, and, the specificity of silver nitrate being increased by acidification with acetic acid, an accurate cytological study of its repartition could be made[3].

The value of the silver nitrate reaction as a test of ascorbic acid has been questioned. Harris and Ray[4], noticing that the liver and the suprarenal medulla, though rich in ascorbic acid, failed to be coloured by silver nitrate, concluded that the absence of this reaction was very little guide as to the presence or absence of vitamin C. Many investigators consider the reaction valueless[5,6]. For example, in a recent review of the question[7], King says: "Silver nitrate staining is not reliable qualitatively or quantitatively as an index of vitamin C in tissues."

In order to clarify this question, we have to consider:

(1) *The occurrence of a reaction with acid silver nitrate.* The reduction of this reagent, without any action of light or heat, is a very specific test of ascorbic acid for the following reasons: the marked reductions are observed only in the organs which by the chemical and biological methods appear to be rich in ascorbic acid (suprarenal cortex, corpus luteum, interstitial cells of the testis and anterior pituitary). In these organs, the cells appear filled with the granules of reduced silver. In organs poor in ascorbic acid, a slight reaction, frequently with a deposit of the silver precipitate at the Golgi apparatus (suprarenal medulla, epididymis), or no reaction except along the walls of the blood vessels, is observed.

When large quantities of ascorbic acid are given to a guinea pig, new reactions appear in the epithelial cells of the intestine, and in the convoluted tubules of the kidney, corresponding chiefly to the increase in absorption and elimination which can be demonstrated by chemical methods.

If guinea pigs are given a diet without ascorbic acid, the reactions disappear quickly, so that after ten days none can be observed in their organs. Biological experiments confirm the absence of ascorbic acid in these conditions.

If ascorbic acid is injected into a guinea pig which is scorbutic and therefore depleted of its reserve, all the reactions reappear within a few hours after the injection.

It may be concluded that all the reactions observed after action of acid silver nitrate are due to ascorbic acid, and, as the histological localizations of the reactions are exactly the same in the animals which, like the rat, are able to synthesize ascorbic acid and