<i>Meconopsis cambrica</i> .	100° C.	<i>Helianthus annuus</i> .	112° C.
<i>Schizopetalon Walkeri</i> .	105°	<i>Pisum sativum</i> .	112°
<i>Brassica Rapa</i> .	110°	<i>Trigonella Fenum-graecum</i>	90°
<i>Eschscholtzia californica</i>	110°	<i>Lotus tetragonolobus</i> .	110°
<i>Lactuca sativa</i> .	114°	<i>Convolvulus tricolor</i> .	120°
<i>Helianthus argophyllus</i>	110°	<i>Nicotiana Tabacum</i> .	112°
<i>Lolium perenne</i> .	110°	<i>Galtonia candicans</i> .	105°

Seeds of *Lagenaria vulgaris* and *Heracleum giganteum* were unable to germinate after exposure to a temperature of 90° C.

The seeds of any one species show considerable individual differences in their power of resisting high temperatures. Thus a large percentage of a sample of seeds, say of *Avena sativa*, will germinate after exposure to a temperature of 100°–105° C., while only a very small percentage will germinate if exposed to 118° C.

The time needed for germination is increased by exposure to temperatures near the maximum. In a general way the higher the temperature to which the seeds are exposed the longer will be the period of germination.

Long exposure to a comparatively low temperature may prove more fatal than a short exposure to a high temperature. Thus seeds which will germinate successfully after one hour's exposure to 110°–120° C. will not germinate after twelve days' exposure to a temperature of 95°–97° C.

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THE EFFECT OF TEMPERATURE ON CARBON DIOXIDE ASSIMILATION¹.—This investigation differs from any which have preceded it on the same subject in the attention paid to uniformity in the environment of the leaves *before* the experiment. Recent work has shown that both the assimilation and the respiration of a leaf depend on its previous nutrition and temperature. For this reason a separate leaf was used for each temperature, care being taken to keep them for some time under exactly similar conditions.

Leaves of the Cherry Laurel (*Prunus Laurocerasus*) were employed throughout.

¹ Abstract of paper read before Section K of the British Association, Belfast, 1902.

Since allowance had to be made for the respiration, this was taken for each temperature under exactly similar conditions to those existing in the corresponding assimilation experiments. A good curve showing the gradual increase of the respiration with the temperature was obtained.

The lowest temperature at which assimilation could be detected was -6°C . This is the first well-established case of assimilation below 0°C .

For temperatures between -6°C . and 33°C . it was found that assimilation is affected in exactly the same way as is respiration. Provided the illumination is sufficient, the assimilation increases with the temperature. At any given temperature the leaf is only capable of a limited absolute amount of assimilation, and increase of illumination beyond the amount requisite for this maximal amount produces no further effect at all. A greater assimilation can only be obtained by increasing the temperature. Thus the fundamental condition regulating the assimilation is the temperature, the intensity of the light occupying a secondary position similar to that of the percentage of carbon dioxide. This simple conception of the relation between temperatures and assimilation stands quite apart from all previous views.

For temperatures above 33°C . the result is complicated by the injurious effects of the temperature. The fatal temperature for Cherry Laurel leaves is in the region of $41-45^{\circ}\text{C}$., but the specific resistance of the individual leaves is very variable. Death is shown by a rapid decrease in the respiration, but it may be several hours before this ceases entirely. Exposure to light has a most marked effect in increasing the resistance of leaves to the effect of high temperatures.

Most interesting results were obtained from the prolonged exposure of leaves to high temperatures. It was found that the respiration of a leaf in the dark falls off much more rapidly than that of a leaf in the light, and the former can in no case be taken as a measure of the latter. At first assimilation and respiration are equally and similarly affected by the temperature, but later the assimilation ceases, while respiration is still active.

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