

and is probably the same for plants of different flowering behaviour. The success claimed by various workers in extracting the active substance has not been reproduced.

There are at least three simpler processes concerned with the perception of the stimulus. There is a high intensity light process (requiring ca. 6.6×10^4 of light energy) which must precede a dark period but can be bypassed by administering sugars or some Krebs cycle acids. With tracer carbon (C^{14}) it has been shown that such compounds are synthesised in light and metabolised in darkness as the dark period becomes longer, supplying substrates for the ultimate synthesis of the "flowering hormone", if any. The dark reaction can be inhibited by a flash of light in the middle of the dark period; this is a low intensity light process probably not identical with photosynthesis. The pigment which perceives the stimulus is probably of phycocyanin type having absorption maximum at 6,600 Å convertible into an isomer absorbing maximum at 7,350 Å. The pigment is also present in lettuce seed, oat mesocotyls, eliolated pea internodes and tomato cuticle.

Low concentrations of auxin inhibit the flowering of short-day plants, while promoting that of some long-day plants; higher concentrations are inhibitory to both. It has been suggested that the auxin level in plants may be the controlling factor in floral initiation. For short-day plants a low auxin level appears to be conducive to reproduction. The possible factors which may reduce the auxin level are

the activities of naturally occurring inhibitors, indoleacetic acid oxidase, enzymes concerned with the synthesis of indoleacetic acid—the native auxin and X-radiations. Synthetic auxin-inhibitors like 2, 3, 5-triiodobenzoic acid, 2, 4-dichloroanisole, etc., counter the inhibitory effect of auxins and promote flowering under non-inductive daylengths. There is good evidence, however, that the effect is indirect and auxins probably act by influencing the metabolic pathways concerned with the synthesis of the flower forming substance.

Recent investigations on CO_2 fixation indicate that CO_2 is essential during the dark inductive period for floral initiation in short-day plants. *Kalanchoe blossfeldiana*—a succulent, fixes CO_2 vigorously in the dark as the induction treatment is prolonged but this CO_2 is evolved as soon as the plants are subjected to light. Using $C^{14}O_2$ it has been shown that the dark fixation pattern in short- and long-day plants is different, the rate of photosynthesis is influenced strongly and new compounds are formed in light photosynthetically and non-photosynthetically. The rate of steady state photosynthesis in induced plants is increased to seven times that of the vegetative plants, and there are qualitative and quantitative differences in the products formed. C^{14} labelled compounds have been traced to the growing points.

The most promising line of study appears to be the isolation of the flower-forming substance or a synthetic compound capable of bringing vegetative plants into flowers.

RADIOACTIVITY OF THE HUMAN BEING

THE amount of radioactive substances deposited naturally in the normal human being has become one of the key figures in recent discussions on "tolerance" dose, "permissible" dose and "damaging" dose in repeated, as well as in single, total body exposures to ionizing radiations. Its magnitude, originally reported by Krebs as close to the accepted permissible body content of 1×10^7 g. radium element permanently fixed in the body, became uncertain, when Hursh and Gates in 1950 found values 100 to 1,000 times smaller than the accepted permissible content. While the reasons for this discrepancy were under discussion, Sievert in 1951, using a special gamma ray sensitive device for measurements on the intact living body as a whole, reported an average radioactivity of the human being close

to the values given by Krebs and thus close to the permissible content.

New data on this subject have been reported by Burch and Spiers and reviewed by Krebs in *Science* (1954, 120, 719). Krebs observes that in order to promote knowledge in the field, the following studies would seem to be necessary:

(i) Measurement of the radioactivity of as many people as possible from different regions of the globe with the modern total-body activity measuring devices. (ii) Measurement of the kinds of radioactive substances in the body, especially with regard to α -emitting, β -emitting and/or γ -emitting elements. (iii) Detailed investigations of the radioactive materials incorporated daily by human beings from air, water and food.