

Plant Cells Emit Ultra-Violet Rays

Botany-Physics

The latest sensation in German scientific circles is the discovery that the apex of certain rapidly growing vegetable and animal tissues emit some sort of invisible radiation which has the power to stimulate the growth of living matter with which it is not in contact. When this was first announced in 1924 by Prof. Alexander Gurwitsch of Moscow it was received with considerable skepticism, but now it has been confirmed by German investigators who are eagerly prospecting the new field of research in various directions.

Prof. Gurwitsch found that if the tip of one of the rootlets of an onion or turnip was fixed so as to point at right angles to the side of another root, though as much as a quarter of an inch away, the cells in the side nearest the tip would multiply more rapidly than elsewhere, and so bend the root away. That this influence was not due to the emission of some

gaseous emanation from the root tip was proved by the interposition of a thin sheet between the two roots. Glass and gelatin sheets stopped the transmission of the growth stimulation power, but quartz did not. This is characteristic of ultra-violet rays and Gurwitsch concludes that the radiation from the root tips has a wavelength of 180-200 millimicrons, which would place it among the ultra-violet rays of high frequency.

The German botanist, N. Wagner, has repeated these experiments with bean and onion roots and measured the effect by counting under a microscope the number of new cells produced in the roots acted upon. The increase is as high as 70 per cent. in some cases. Old cells that have ceased growing show the greatest relative increase.

The German bacteriologist, M. A. Baron, has found that the radiation from onion roots will likewise accel-

erate the growth of anthrax bacillus and other bacteria. The growing tip of toadstools gives off these same growth-generating (mitogenetic) rays.

The Siemens Electrical Company has taken up the question and Doctors Hauser and Vahle, working in these laboratories, report that certain growing animal tissue, such as cancer, emit such rays.

These results, if confirmed, will radically revolutionize present theories of life and growth. It has hitherto been assumed that the impulse to cell subdivision was somehow due to the direct contact of certain chemical substances transmitted through the tissues, but it now seems that an energy agency is active in vital processes, an immaterial radiation of the nature of light but of too high a frequency to be detected by our eyes.

Science News-Letter, June 16, 1928

Modern Diogenes—Continued

Then there are the organizations that attempt, among other work, to teach ideals of honest behavior. Does urging children to play the game fairly, to emulate George Washington's example of honesty about chopping down cherry trees, really get results when the child faces some small crisis in his career? The Character Education Inquiry wanted to know, because millions of dollars are spent on teaching ideals to children without much attempt to check up on results.

"We found in several schools a system of interesting school children in the achievement of virtues by practising them," the psychologists state. "Each child was expected to keep a daily record of certain kinds of good deeds, among which was truth telling. He was rewarded for a good record by being advanced in the organization from rank to rank.

"In one school, where about half the boys had joined, the members of the organization cheated more on every test except the athletic contest. Furthermore, the higher the rank achieved, the greater the deception.

"Girls under the influence of this system cheated less than girls who did not have it. Yet the longer they were in the organization, and the higher they rose in rank, the more they cheated. We can only conclude

that it is not the system which is responsible for greater honesty among these girls. It is not clear whether the organization happens to advance those children most proficient in subterfuge, or whether it makes them into more facile liars."

Children attending Protestant Sunday schools and Hebrew religious schools were slightly less deceptive as a group than those who did not attend, but the difference was pronounced negligible. Apparently, the investigators conclude, these religious schools do not meet this particular problem at the present time. A typical organization for young people was also studied, with the discovery that members differed very little from non-members in honesty. "But it must at once be added, "the investigators say, "that in other ways these various religious and character building organizations may be having a vast influence for good."

In one experiment the psychologists tried to find out whether teaching of ideals does carry over into a child's behavior when the child really links up the lesson with his own conduct. The experimenter stepped up to the blackboard and wrote, "Honesty is the best policy" just before giving a test. He left the room while the children scored their own papers, so that cheating was easy. Later, in

another experiment, he wrote on the board, "God loves an honest man."

In this series of tests, the children who had religious training grew progressively more honest as the idea of honesty and then the idea of God was introduced. Children who did not attend religious schools got progressively less honest in the same circumstances.

Introducing these ideas straight into a situation where honesty was a live problem plainly changed the children's behavior to a noticeable degree. From this experiment, it is suggested that "the differences in behavior are large enough to warrant the feeling that in certain forms of religious training there are potential values that are far from being realized in the ordinary life of the children concerned."

To teach young children to meet their problems fair and square, it is proposed that adults should take the time to manage situations so that the child will not feel the need to deceive, and will not think of deception as desirable. Then, as the child builds up behavior habits in which he plays an honest part, he may gradually gain an intelligent grasp on the social significance of honor, and a really usable ideal of honesty.

The twenty-odd tests of honest conduct used in (*Turn to next page*)