

POPULATION

Swedish Commission Issues Report Forbidden by Law

THE REPORT of the Swedish Population Commission, an official government body, is itself in clear violation of a still-existing Swedish law forbidding birth control information, it was revealed by Prof. Gunnar Myrdal, economist member of the Commission speaking before the graduate school of the U. S. Department of Agriculture.

Although realizing that the spread of birth control information would have as an immediate effect the even more rapid decline in an already alarmingly low birth rate, the Commission nevertheless believes that repeal of the laws hindering sale of and propaganda for contraceptives is essential to the building of a desirable quality in the population, Prof. Myrdal indicated. Comprehensive sex education in the schools and for adults is proposed by the Commission, he said. A handbook on birth control methods is an appendix to the Commission's report.

"The Commission sees in these reforms an act of human honor and truth," Prof. Myrdal said. "To have laws that contradict people's normal behavior and personal beliefs is said to be a way of undermining the morals of the nation. Such laws therefore counteract their own aims.

"Only when this whole field is cleansed of public hypocrisy, when birth control is declared to be good in itself, and thus the natural advantage of rational means over less efficient or damaging means is admitted—only then will it be possible to fight successfully by truthful education and social reforms the extreme extension of birth control which is now endangering the happiness and well-being of the individual family and the survival of the nation."

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GENERAL SCIENCE

Industry Needs Basic Research for Growth

RESearch is one of the most used, and most abused, terms in the English language today. Dr. Karl T. Compton, president of Massachusetts Institute of Technology, has defined it—in its simplest terms—as the application of all available knowledge and techniques for the systematic search for new knowledge.

One of the hardest jobs of scientific leaders is to convince industry, at least

large portions of it, that research pays in the long run and that new knowledge is the springboard from which is launched future progress of the nation; industrial and otherwise.

One of the commonest short-sighted habits of a company is to apply what is called research to improve existing products, while, at the same time, basic long-range research is neglected.

In a recent address Dr. Compton presents the difference in the two pictures. Suppose a hundred years ago, he said, an industrial laboratory has set out to develop more efficient types of lamps. It would have studied flames, oils, wicks, chimneys and so on. But it almost certainly would not have studied magnets, the properties of metals, electrical currents and high vacuum.

Yet it is out of such studies in pure research that have come modern lighting and communication by wire and radio. The King of England is once said to have asked Michael Faraday of what use were his experiments with compasses, magnets and wire. To which Faraday replied, "Your Majesty, of what use is a baby?"

In many ways applied research, making present things better, is comparable with doctoring a grown man already in, or past, his prime. Fundamental research produces the "new baby" which may turn out to be another genius, or intellectual leader; or—to keep the analogy straight—another new, powerful industry.

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PHYSICS

New Harvard Device Enables Fast Count of Cosmic Rays

A DEVICE enabling the fastest and most accurate counts ever made of cosmic rays and other particle radiation has been developed in Harvard University's physics laboratories by Dr. E. C. Stevenson, instructor of physics, and Dr. Ivan A. Getting, junior fellow.

With the new instrument, technically known as a scaling circuit, random electrical impulses coming only a fifty-thousandth of a second apart can be distinguished and counted. The circuit is so stable counts can be made at these terrific speeds for months on end without any effective changes in the equipment.

The device was designed for use in a long-range program of counting millions of cosmic rays daily recently undertaken at Harvard. No mechanical counter is fast enough and previous electrical circuits were either too slow or too unstable.

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IN SCIENCE

ENGINEERING

Air Conditioning Expanding But Still Home Luxury

AIR CONDITIONING, which to most of us means air cooling, is particularly appealing in hot summer weather, when a cooled restaurant, movie, or Pullman is a refuge against the heat. On a hot day we wonder how soon science will make bearable weather for all offices, stores, factories and homes.

The problem is largely economic. The recession, as well as the heat, might be considerably relieved if all who wish it could afford to have air conditioning installed. At that, it is a business that will probably gross a hundred million dollars this year.

For some industries, air conditioning is no novelty, for in textile manufacturing, cigarette making, candy factories and other similar fields, regulation of temperature and humidity has become a technologic and economic necessity. Stores find that customers are more willing to buy if they are cool and comfortable. Theaters have increased rather than decreased business in very hot weather.

For homes, however, air conditioning is still in the luxury class. It has been estimated that with currently available equipment, the full cost of complete year-round air conditioning for a \$10,000 to \$15,000 house, with no further charge for heating water, may average about \$25 a month, including capital charges, over and above the cost of heating alone. For cooling a single room, however, self-contained or "package" units are being made cheaper and more practical.

New buildings are more easily air conditioned than old ones. Lower ceilings are possible, windows can be reduced, ducts for air can be made integrally a part of the structure.

Increased use of cooling water due to air conditioning is causing some concern among city officials where water and sewer systems are inadequate or overtaxed. But cooling towers allowing reuse of water may overcome this difficulty.

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The apple is believed to have no less than 500 insect enemies.

E FIELDS

PHYSIOLOGY—PSYCHOLOGY

Auto Accidents Ascribed To Effect Of Noise On Eyes

ASCRIBING automobile accidents on highways to the effect a loud noise such as a muffler cut-off has on the driver's tired eyes may sound pretty far-fetched to you, but members of the American Neurological Association heard this explanation suggested by their president, Dr. Charles A. Elsberg of the Neurological Institute, New York City.

The explanation lies in the fact that the brain acts as a whole with very little isolated activity by one part or another. Each brain process, moreover, is influenced by many other brain processes. Brain wave studies have shown this to be the case, Dr. Elsberg said, and so have some of his own researches on the special senses such as hearing and vision.

You know how, when you want to hear a faint sound or smell a faint odor, you shut your eyes. The reason, Dr. Elsberg pointed out, is because of this influence the special senses like seeing and hearing have on each other. Dr. Elsberg has been able to test this influence quantitatively. He found that a person needed more light in order to see an object after hearing a loud noise or smelling some strong odor than he did before such stimulation to hearing or olfactory sense.

Getting back to the highway accidents, Dr. Elsberg said that if a person "is using his vision up to the limit of its capacity, and a truck with a muffler cut-off is passing him, the loud noise will influence his vision which is already taxed to the fullest degree. As a result he may not be able to judge distances as well, and in an emergency he may have an accident."

Earlier diagnosis of brain tumors may result from the sort of tests of the special senses which suggested the explanation for some highway accidents. If the tumor is located in the part of the brain which functions when we smell things, for example, the smelling function may be disturbed or interfered with. This may happen and be detected before the tumor has caused a change in the shape

or size of the affected part that could be detected by X-ray pictures after air or oxygen injections.

Science News Letter, July 16, 1938

PHYSICS

Greatest Invention Would Be Control of Gravitation

TO THOSE who look with amazement upon such new scientific developments as television, airplanes, air-conditioning and a thousand other wonders, there may seem to be little for the inventors of the future to do.

Nevertheless the development of research and the perfection of new materials tend to accelerate the technical progress of the future. Limitations may be imposed by dictators, wars and social disorganization. Shortages of energy, raw materials, and changes in natural conditions do not seem important in stemming inventors' progress, in the near future.

A British engineer, F. O. L. Chorlton, has attempted to look into the future of invention. He sees transport on land, water, and in the air, as the most interesting field for invention. There may be steam power for the larger airplanes.

He suggests we may even be able to control gravitation in the same way. Such a revolutionary invention would probably have a greater effect on the conditions of human life than any previous discovery.

Transmission of power in bulk through the air will probably come to pass, he predicts. Beams of energy would be radiated along each air line and airplanes would not need to carry gasoline.

In power production, probably the main improvement will be in the utilization of other liquids than water or steam for the transmission of the energy of the fuel to the revolving motor. Mr. Chorlton sees production machinery becoming more complicated, within the limitation of human capacity to control it. Entirely automatic production of our daily needs will come more and more into use until only a very few hours of work will be required from each individual.

Radio will be improved until we shall be able both to see and to speak to anybody in any part of the world. Electric lighting will improve in color and efficiency. Some control of the weather on a large scale may even become possible through the invention of special apparatus.

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INVENTION

Electrical Generation and X-Rays Greatest Discoveries

FARADAY'S discovery of electromagnetic induction was the most important event of the nineteenth century, declares Dr. Arthur H. Compton, University of Chicago Nobelist in physics.

Why? "Empires would fall apart, society would become disorganized, if the electrical machines based on Faraday's discovery were put out of commission."

The discovery of X-rays by Roentgen in 1895 is perhaps the greatest event within the lifetime of persons now living. What could be of more purely academic interest than extending the spectrum of electromagnetic radiation to a thousand-fold shorter wave-length?

Dr. Compton compares the consequences of Roentgen's achievement with the dramatic events of the World War.

First consider death, he says.

Such data are hard to find. The war lords do not want them advertised. In the World War there were about 8½ million soldiers killed in all the armies, one-fourth of the able-bodied men now living in the United States and Canada—a tremendous slaughter.

Yet of the 450 million people then living in the countries at war, Dr. Compton points out, some 50 million will have died of cancer. The lives of some three million others will have been saved from cancer by the use of X-rays and the radium which was discovered as a result of X-rays. If you add to these the considerably greater number whose lives have been saved by the X-ray diagnosis of tuberculosis, a broken bone or an infected tooth, it becomes evident that even in the warring countries X-rays will have saved as many lives as were taken in battle.

X-rays have also had their great economic and political effects, not so dramatic as those of the war, but perhaps even more far-reaching. What does it mean to the economic and political life of the United States to be integrated by radio? Yet without X-rays, no radio. For the radio is the child of the electron, and the electron owes its recognition to the ionization of the air by X-rays. Similarly, were it not for X-rays we should not now have sound movies or long distance telephony, or radio beacons to guide air mail, or a multitude of other devices that rely upon electrons for their operation.

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The ground over Mammoth Cave, Kentucky, is a bird sanctuary.