

VETERINARY SCIENCE

Reserpine Tranquilizes Chickens and Turkeys

CALMER BIRDS in the hen house are predicted with the development of a tranquilizer for chickens.

A new product containing reserpine, a drug used to control high blood pressure and other human ills, has been developed by CIBA Pharmaceutical Products Inc., Summit, N. J. Added to the chickens' feed in very low concentrations it is said to help the chicken withstand stress.

Treated chickens had a higher survival rate and produced more and higher quality eggs than did hens on a standard diet. They also are not bothered as much by crowding, social maladjustment, temperature extremes and disease.

CIBA researchers claim the product is also economic because feed waste is reduced. The sedate treated chickens scratch less food out of the feeder and onto the ground.

Turkeys were included in the study. The drug is said to help control ruptured aorta, a deadly affliction of turkeys.

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ENGINEERING

Future Mining Engineers Must Be More Specialized

THE NEXT generation of mining engineers will face problems requiring a more intensive specialization than that characteristic of earlier generations.

Fields that need intensive study are properties of rocks under confining forces, effects of pressure release due to the mining operation, and the plastic and viscous flow of rocks in deep mining, Walfrid Been of Michigan College of Mining & Technology, Houghton, Mich., told the American Mining Congress in Denver, Colo.

Mr. Been said the intensification of the science background must be made at the cost of relinquishing time in some other area of training. However, he said, the danger of subordinating engineering qualities to a preoccupation with the scientific studies must be recognized.

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PLANT PATHOLOGY

Iron Relieves Virus Discoloration in Camellia

YELLOWISH splotching of leaves and white mottling of colored flowers are produced by a virus disease in camellias, but such symptoms can be relieved by a special application of iron.

This is reported by a horticultural research team at the University of California, Los Angeles. The team is composed of C. P. North, Dr. Arthur Wallace, Dr. G. F. Ryan and R. T. Mueller.

Addition to the soil immediately surrounding the diseased plant of relatively small amounts of a special iron compound completely removed all traces of virus dis-

coloration symptoms over a period of six to 12 months.

Gradually leaves returned to a full green color and the plant started producing solid colored flowers instead of the red and white variegated ones it had produced prior to treatment.

Although all symptoms of the disease disappeared following treatment, the virus remained in the plant and was still capable of infecting other plants. Subsequent new growth was similar to that of virus-free plants, but when the iron supply was depleted symptoms returned.

The iron was supplied in a compound known as a chelate, in which the iron is held in the vise-like grip of a chemically structured "claw." The iron deficiency apparently caused by the virus is little understood.

There appears to be some kind of inter-relationship between chlorophyll and flower-pigment synthesis, iron level and the presence of virus in camellias.

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MEDICINE

Infections May Take More Lives Than Wars

INFECTIONS that have become resistant to antibiotics may soon take more lives than have been lost in some wars.

Dr. I. S. Ravdin, University of Pennsylvania School of Medicine, speaking at the scientific colloquium of the Northwestern University Medical School centennial, warned of the dangers of mass use of antibiotics while discussing problems now facing doctors.

In spite of the fact that bacterial geneticists very early warned the medical profession that they must understand the basic laws of bacterial behavior, it was not long before doctors were again faced with the organisms which, while initially vulnerable to these newly found agents, had, because of indiscriminate use, become resistant to them.

The entire fault does not lie with the doctor, however, Dr. Ravdin pointed out. Many patients insist on receiving antibiotics which are capable of producing as much harm as the good they do when properly given, he said.

Another problem scientists face today, he continued, is the mystery of malignancy. More specific detecting tests and better methods of therapy are needed, he added.

"In spite of all the splendid fundamental and clinical research which is being done in this country, the practitioner finds it difficult to sift the wheat from the chaff, and the families of those suffering from widespread malignant disease wonder whether members of the medical profession are withholding information of value in the treatment of those patients," he said.

It is unthinkable that dedicated investigators would do this, he continued, but many people are not convinced that this is true. He then charged that certain members of the medical profession have "wittingly or unwittingly" encouraged people in this belief.

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IN SCIENCE

SURGERY

X-Ray of Tumor Inhibits Spread Through Body

A LITTLE X-ray appears to go a long way toward preventing tumor cells from leaving their malignant mother and spreading through the body of a mouse.

Two researchers from the National Cancer Institute, Bethesda, Md., explained to colleagues at the American College of Surgeons meeting in Atlantic City, N. J., how small doses of radiation on mouse tumors significantly inhibited the spread and growth of more tumors when cells from the primary tumor were injected into mice.

A group of tumors was given 200 roentgens and observed, Drs. Robert C. Hoye and Robert R. Smith explained. Some of the tumors were removed from the mice after 24 hours. These tumors were converted to cell suspensions and injected into other mice. Other tumors in other mice received the same treatment, except that they received radiation doses varying from 170 to 2,000 roentgens.

Results indicate that the ability of these X-ray-exposed cells to metastasize was significantly reduced. For instance, a dose of 715 roentgens caused a 50% reduction in the number of pulmonary implants.

Irradiation of tumor DBA-49 with 2,000 roentgens brought no response in the size of the tumor, but injection of a cell suspension of this tumor reduced the number of metastases from 113 to two tumors per mouse, they reported.

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ICHTHYOLOGY

True Albino Hagfish Found Off California

AN ALBINO hagfish, believed to be the first record of this "natural freak," has been found off the coast of southern California.

During a routine collection of hagfish, Dr. David Jensen of the Scripps Institution of Oceanography reports finding the single albino among some 500 fish. Over the past two years, he says, he has collected about 5,900 hagfish. About 20 of these were piebald with areas of pale pink skin because of reduced pigmentation.

Ordinarily, the hagfish (*Eptatretus stoutii*) is pinkish to purple gray with the lighter color on its stomach. The albino specimen, described in *Science* (Sept. 25), is white except for a pinkish cast due to the blood flow.

The pulsations of the caudal, or tail, heart are plainly visible under the albino hagfish's translucent skin, Dr. Jensen says. The hagfish is one of the most primitive vertebrate animals.

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E FIELDS

GEOPHYSICS

Arctic Ocean Is Poor In Small Plant Life

THE ARCTIC Ocean has been found to be one of the most barren of the world's oceans.

Although it comprises 1/23 the area of all oceans, it contributes only about 1/1,000 of the total oceanic production of small plant and animal life, a basic food for larger marine life.

This conclusion is based on studies made prior to and during the International Geophysical Year and reported by the U. S. National Committee for IGY of the National Academy of Sciences. The studies involved measurements of the amount of photosynthesis taking place in the Arctic Ocean and of the concentrations of chlorophyll and nutrients in the water.

Ice-free Arctic waters may develop a maximum chlorophyll concentration as much as 13 times that found in the ice-covered Arctic Ocean, it was found.

But even if the small amount of sunlight penetrating the Arctic ice did not limit the growth of tiny plant life, the Committee said, the poverty of the Arctic Ocean in nitrate and phosphate nutrients would still make its productivity level one of the lowest in the world.

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GENERAL SCIENCE

Lord Russell Advocates Creation of World Body

LORD Bertrand Russell recently said that mankind must soon choose between accepting extinction or creating a powerful world authority with a monopoly on the major weapons of war.

Lord Russell, world-famous philosopher, mathematician and Nobel Prize winner, spoke as one of the six renowned panelists at a symposium in New York on "The Future of Man," marking the dedication of the new headquarters of Joseph E. Seagram & Sons. Dr. Milton S. Eisenhower served as chairman.

The other panelists were Dr. Ashley Montagu, anthropologist and author; Robert Frost, poet, educator and four-time Pulitzer Prize winner; Sir Julian Huxley, biologist and author; Devereaux C. Josephs, chairman of the President's Committee on Education Beyond the High School, and Dr. Hermann J. Muller, zoologist and Nobel Prize winner.

The fate of the world, contended Lord Russell, depends on the selection of statesmen to further a world authority that can allow man to enjoy the "universal well-being which science has made attainable."

Dr. Montagu explained that man has become adept at learning, not only more sound things than any other creature, but more unsound things.

"The result," he said, "is not intelligence, but confusion."

He proposed a specialized education "conceived as the science and art of human relations plus the critical ability to use one's mind critically." This would require a re-valuation of our present modes of instruction, which he believes fail to meet his definition of education as "humane discipline of the whole person."

Sir Julian urged man to take immediate steps to work out a world population policy to prevent erosion of the world's resources. Such steps, he said, "would lead to the development of a 'Fulfillment Society' to replace the Welfare State.

In the coming century, he said, man's first job will be to think collectively, in terms of continuing the human species as a whole.

"The faith of the future will be in the possibilities of the human species, and the power of human knowledge to realize them more effectively."

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PUBLIC HEALTH

Little Is Known About Most Damaging Poison

BOTULISM, caused by nature's most damaging poison, today remains a mystery to the scientific world.

Since the canning industry solved the problem of killing the botulism organisms, this dread poison ceased to be a threat. However, there is much work yet to be done in this field, Dr. Carl Lamanna of the Naval Biological Laboratory at the School of Public Health, University of California, reports in *Science* (Sept. 25).

There are five strains of botulism organisms, labeled A, B, C, D and E. Whether or not there are other types has yet to be determined.

Food poisoning in man by toxin types A, B and E have been reported frequently. Botulinal toxins are unquestionably the most potent poisons known, the health officer says. Botulism results in vomiting, abdominal pain, difficult vision, dryness of the mouth, nervous disorders and a barking cough in man. There have been 13 cases of botulism in the United States this year.

Most of the scientific work on botulism has centered around the type A toxin. This is probably due to the fact that Type A is the cause of botulism in humans, Dr. Lamanna speculated. In addition, culture collections of a number of strains of type A bacilli readily produce large quantities of toxin, poison producers, in the laboratory.

The problem at hand is to study the other types and learn as much about them as science now knows about type A, he stressed. Science does not yet know what, in the molecular structure of these poisons, causes their specificity and extraordinary toxicity.

There has been a decline in interest in botulism, he said.

"It is to be hoped that no new threat will be needed to generate a renewed wave of investigations," he concluded.

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ENGINEERING

Foresee Atomic Reactors For Industrial "Heat"

USE OF ATOMIC reactors for generating industrial "process heat," the sort of low-temperature heat needed in myriads of manufacturing operations, may be near. Conceivably this might bring industry to areas now lacking it, or help hold prices down under favorable economics.

Representatives of the Atomic Energy Commission and industry met Oct. 1 at Germantown, Md., to discuss "development and potential industrial uses of reactors for the production of low-temperature process heat."

About 400 persons heard how process heat reactors could be used in workhorse jobs for production of metals, glass and cement and petroleum, coal, chemical, food and paper products, or how they could be used to heat buildings and ovens, or generate heat for converting salt water into water for drinking or irrigation.

Possible advantages of nuclear process heat over conventional heat, the AEC believes, include elimination of smokestack wastes and sharp reduction in space needed for fuel storage.

Use of process heat reactors would also enable planners to eliminate "fuel source" as a factor in deciding where to put a new plant. Moreover, the reactors could produce radioactive isotopes and plutonium as by-products.

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AGRICULTURE

Treated Sewage Water Improves Crop Yield

IRRIGATION with waters carrying effluent from city sewage disposal systems can greatly increase crop yields, University of Wisconsin tests have indicated.

In an experiment with waters of a creek carrying effluent from the Madison sewage disposal system, C. J. Chapman, University soils specialist, and J. W. Clark, Dane County extension agent, found that the use of the effluent increased the dry matter forage yield of a pasture by 400 pounds an acre.

When 1,000 pounds of 16-8-8 commercial fertilizer was broadcast and then soaked in with the effluent, the yield increased from 2,400 pounds an acre to 12,500 pounds.

University tests have shown the effluent contained 24.8 parts per million of nitrogen, 25.7 parts of phosphorus and 13.1 of potash. There was also some sodium, but the tests showed that it would not become toxic because normal rainfall leached it out of the soil.

The researchers estimated that in a normal year ten inches of effluent could be added to soils, and this would contain the equivalent of 300 pounds of 20-20-10 commercial fertilizer per acre.

They suggested that where the value of sewage effluent is proved, it would be a simple matter to pipe it or run it through a ditch for disbursement on crop bearing lands.

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