

AGRICULTURE

Irrigation Aids Expansion Of Australian Agriculture

➤ IRRIGATION is the answer to the expansion of food production in Australia, S. M. Wadham, professor of agriculture at the University of Melbourne, told members of the British Association for the Advancement of Science at Newcastle-Upon-Tyne, England.

Over 1,000,000 acres are already under irrigation, and "there is no doubt as to the ultimate capacity for an expansion of production, the limits of which can scarcely be described," Prof. Wadham stated.

The limit to this expansion will be set by the availability of water at a reasonable cost, and by other technical and economic considerations, Prof. Wadham said.

"From 150,000 acres of irrigated orchard and vineyard come produce for the largest part of the country's production of dried and canned fruit, most of which is exported," he continued.

The rice needs of 8,000,000 people are taken care of by irrigated areas. The fodder and hay for the dairying and lamb industries come from irrigated areas, and on irrigated pastures themselves graze the best dairy herds and fattest lambs.

Science News Letter, September 17, 1949

ICHTHYOLOGY

Big, Meaty Cod Feature Bering Sea Fishing Ground

➤ A NEW fishing ground, featuring meaty, 20-pound cod, has been discovered by U. S. Fish and Wildlife Service investigators off the west coast of Alaska.

Despite encouraging reports of hauls made in the Bering Sea from Norton Sound to the southern end of Nunivak Island, the area is not without its perils, a preliminary report indicated. Cold currents from the Siberian side of the Sea were blamed for many unproductive drags and such hazards as ice-borne boulders and coral-like formations which snagged and damaged trawls.

But the promising catch of cod and flatfish makes the area worth further study which it will get, Service officials said.

Science News Letter, September 17, 1949

AERONAUTICS

Disposable Oxygen Mask For Emergencies in Flying

➤ INEXPENSIVE, disposable oxygen masks for airplane passengers in emergencies when a plane rises to unexpected high altitudes to pass over a storm, were revealed at the Wright-Patterson Air Force Base where they were developed. Because never re-used, they will never require sterilization.

The mask is designed for use with standard constant-flow oxygen equipment and

no changes will be required in aircraft interiors to accommodate the new device. Essentially, it consists of a porous paper face piece, a bellows fashioned of very thin pliofilm, and a plastic tubing which connects with the plane's oxygen supply. As the wearer breathes in oxygen, the bellows expands and contracts and the gases he exhales escape through the porous paper.

Early tests on the disposable mask, which engineers estimate will perform satisfactorily for four or five hours, were carried out in conjunction with the University of Washington. The mask is expected to be effective at altitudes up to 25,000 feet, but not to be satisfactory at higher levels.

Science News Letter, September 17, 1949

MEDICINE

New Sulfa Drug Aids Chronic Intestinal Ailment

➤ DOCTORS now have a new medicine which is effective against chronic ulcerative colitis, described as one of the "most dreadful and unpredictable diseases of the abdomen known to medical science."

It is a member of the sulfa drug family and is called nisulfazole. Announcement to the medical profession of its placement on the market was made by J. G. Jordan, president of George A. Breon & Co., Kansas City, Mo., manufacturer of the drug.

The sulfa drug's effectiveness in controlling symptoms of the disease was discovered in studies conducted by the company's research laboratories and by Dr. Ralph H. Major of the University of Kansas Medical School. These results have subsequently been confirmed by other investigators.

The favorable results are believed mostly due to nisulfazole's suppressing the increased supply of the enzyme, lysozyme, found in the gastrointestinal tract, and to its action in arresting the growth of bacteria.

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MEDICINE

High Blood Pressure Is Field of New Journal

➤ HIGH blood pressure and related circulatory diseases will have their own medical journal beginning early next year. *ANGIOLOGY* is the title of the new journal devoted to "peripheral vascular diseases."

Medical articles to be published in this journal will cover the group of diseases that now rank first as the cause of death in the United States. Arteriosclerosis, commonly called hardening of the arteries, and Reynaud's disease are included in such blood vessel disturbances. They are much more prevalent now that more people live longer and reach old age.

Dr. Saul S. Samuels of the Stuyvesant Polyclinic in New York City will be editor-in-chief.

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IN SCIENCE

VETERINARY MEDICINE

Barren Cows May Give Milk Thanks to Sex Hormone

➤ A WORLD without bulls, thanks to the power of a synthetic female hormone to induce milk production in virgin heifers and barren cows, is on its way.

"The first stage in making the male redundant," in the dairy world at least, has been taken, Sir John Russell, director of Rothamsted experimental station, declared in his presidential address before the British Association for the Advancement of Science, Newcastle-Upon-Tyne, England.

Lactation was induced in the virgin heifers and barren cows by burying tablets of the synthetic female hormone, diethylstilbestrol, under the animals' skin. This is the same synthetic chemical which brings relief of hot flushes and other symptoms to many middle-aged women.

Richer milk and more of it can be produced by injections under the cow's skin of another hormone chemical, thyroxin, from the thyroid gland. Dr. H. D. Kay, of the Dairy Research Institute, Shinfield, England, has found, Sir John reported, that injections of thyroxin or feedings of iodinated milk protein (casein) increased the fat content of milk and raised the yield up to 20% after the peak of milk production was passed.

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ENGINEERING

Quick Temperature Change Used in New Metal Process

➤ FIVE seconds only are required to temper a metal surface in an electronic heating process revealed by General Electric in Philadelphia. It was developed by engineers in the company's switchgear division.

In this short interval a metal surface is heated from room temperature to 1,600 degrees Fahrenheit and cooled again to ordinary temperature. The process is particularly for small metal parts and is employed to harden the toothed surfaces of small ratchet wheels for automatic circuit reclosers.

The process uses an electromagnet which holds the part to be tempered within the field of a powerful electronic heater. As soon as the part has been heated to the proper temperature, an automatic switch shuts off the heater and also the current from the electromagnet, and the part drops into a cooling bath of oil.

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E FIELDS

ANTHROPOLOGY

Old Piltdown Man Is Only About 10,000 Years Old

► FAMOUS Piltdown man, long considered one of mankind's oldest ancestors, is a mere anthropological infant, not more than 10,000 years old, Dr. K. P. Oakley of the British Museum disclosed to the British Association for the Advancement of Science at Newcastle-Upon-Tyne, England.

Previously considered to be between 100,000 and 500,000 years old, the jawbone and skull are now proved by analysis of their fluorine content to be definitely of the last interglacial period.

Fossil animal bones of known geological age, dating from the Pleistocene or glacial period, unearthed nearby the human bones at Piltdown, England, had the same content of the chemical fluorine picked up from the groundwater of the locality.

Dr. Oakley exploded the attractive idea of modern man being descended from the Piltdown man, also known as Eoanthropus, the Dawn Man. A long controversy over whether the skull and the jawbone were from the same individual seems to have been settled also, as they both have the same fluorine content. Some experts held that the skull was that of a relatively recent man and the jawbone of an ancient anthropoid.

England still claims an ancient human ancestor. The Swanscombe skull was given the fluorine test and pronounced Middle Pleistocene, about 60,000 years old, and probably Britain's earliest man. But in China, Java and perhaps Africa, man-like creatures lived earlier.

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ASTRONOMY

Dim Stars Discovered Broadcasting Radio Waves

► DIM stars are broadcasting to the earth a short-wave radio noise that has been received with special antenna, the British Association for the Advancement of Science was told in Newcastle-Upon-Tyne, England, by Dr. F. G. Smith, Cambridge, expert in radio astronomy.

The "broadcasting stations" producing these four-meter waves are thought to be stars with dim surfaces, hard to see. They are about as far away as the nearest known visible stars, and distributed over the sky about the same way as stars giving off light.

Two major sources for these radio signals have been discovered in the Northern sky, and 23 smaller ones have been discovered. None of these corresponds to

bright visual stars. The major sources are not stars brighter than eighth magnitude, too faint to be seen with the naked eye.

The radio stars are about as big as ordinary visual stars, as judged by a study of fluctuations of the signals received. The electrons in the stars producing signals have a motion corresponding to at least 10,000,000,000 electron volts and the temperature is about 10,000,000,000 degrees.

These immense energies suggest to Dr. Smith that the mysterious cosmic rays may originate in the same stars that give rise to the radio waves he has observed.

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GENERAL SCIENCE

Scientist's Nomination Held Up by Investigation

► BECAUSE of anti-capitalistic and pro-communistic statements he is reported to have made at a Moscow "peace conference," the British Association for the Advancement of Science has deferred renominating Prof. J. D. Bernal, University of London crystallographer, to its governing council.

Prof. Bernal is to be asked to reiterate his actual Moscow statements. Press reports stated that he accused capitalism of trying to enslave science in the interests of war. He is reported to have told the Moscow meeting that "soon in the United States no one who has not been an inveterate enemy of the Soviet Union will be allowed to teach or engage in scientific research."

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CHEMISTRY

Land Yields More Uranium Than Ocean Water

► AMERICAN experts in Washington see no practical possibility of getting uranium, raw material for the atomic bomb, out of sea water.

Scientists have known for over a decade that the sea does contain uranium as well as other radioactive elements. There is, however, much less uranium in sea water than in the same amount of ordinary earth, although it might be easier to get it out of water than out of earth. Magnesium is mined from the sea commercially.

Discussion of the possibility of getting uranium from the sea arose from a speech of Dr. Hans Pettersson of Sweden to the British Association for the Advancement of Science at Newcastle-Upon-Tyne, England.

He stated that the uranium content in sea water is fairly constant, varying between limits of one to two micrograms per liter, with a slight tendency to increase at great depths. A microgram is one one-millionth of a gram, and a liter is about the same as a liquid quart. (An ordinary dime weighs about two grams.)

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BIOCHEMISTRY

Action of Deadly Poison Seen as Jamming Cell Cycle

► FLUOROACETATE, a rat poison better known by its war secret name of 1080, acts to "jam the cycle" of cell chemistry in its killing course.

This new theory of the poison's action with the latest research on which it is based were announced at the meeting of the British Association for the Advancement of Science at Newcastle-Upon-Tyne, England, by Prof. R. A. Peters of Oxford University.

No antidote for 1080, or fluoroacetate, has yet been discovered. Prof. Peters and colleagues, however, are the scientists who discovered the antidote for arsenic and mercury poisoning, known as British anti-lewisite, or BAL. The war gas, lewisite, is an arsenic compound. Discovery of its antidote was made through fundamental biochemical studies similar to those Prof. Peters is now making on the action of fluoroacetate.

The chemical cycle which fluoroacetate "jams" is known as the tricarboxylic cycle. It is a reaction involved in the breakdown of sugar, and goes on in a cycle.

Fluoroacetate gets into the cycle, and is poisonous, because it is so like an acetate chemical normally formed during the cycle that the body's enzyme for handling the normal acetate cannot distinguish between the normal one and the fluoroacetate.

The chemical result is an accumulation of citrate to 56 times the amount normally found in kidney tissue, and 26 times the amount normally found in the heart. Why this accumulation of citrate is poisonous is not yet known.

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ENTOMOLOGY

Insects Invade England On Warm Air Currents

► ENGLAND is being invaded from the Continent. Insect pests, carried by warm air currents and winds, are drifting across the southern North Sea and the English Channel.

At the British Association for the Advancement of Science meeting at Newcastle-Upon-Tyne, A. C. Hardy, professor of zoology and comparative anatomy at the University of Oxford, reported that large groups of small insects, particularly aphids, are known to stay in the air an average of 15 hours, or 246 miles.

The floating insects are caught in four-foot nets at mast heights on ships which are over 100 miles from the coast. Knowing the time and place where the bugs are caught, their time in the air and the distance traveled are computed mathematically from known winds.

Science News Letter, September 17, 1949