MEDICINE

Drugs for Other Ills Tried in Polio Fight

➤ ANTI-GOITER DRUGS, anti-vitamin chemicals such as are used in treatment of leukemia, and PAS, or para-aminosalicylic acid, used in treating tuberculosis, are going to be tested as possible drugs for fighting infantile paralysis.

The tests will be made in laboratory mice. The drugs named above are just a few of a large group of chemicals that will undergo testing in a screening operation that starts at Indiana University Medical Center, Indianapolis, with a $12,975 March of Dimes grant from the National Foundation for Infantile Paralysis. The tests will be made by Drs. Randall L. Thompson and Sherman A. Minton.

Discovery by scientists that certain drugs which protect laboratory mice against smallpox vaccine virus might also protect the mice against certain strains of Type II polio virus has led to this large scale project for finding an anti-polio drug.

Science News Letter, January 17, 1953

MEDICINE

PAS Aid in TB Due To Anti-Thyroid Action

➤ PAS, ALLY to streptomycin in the fight against tuberculosis, may owe some of its beneficial effect to its anti-thyroid action.

Specifically, the gain in weight, lowering of temperature and slowing of the pulse may be due to this action, reports Dr. Roderick R. Hamilton of Hawick, Scotland, to the *British Medical Journal* (Jan. 3).

PAS, short for para-aminosalicylic acid, causes enlargement of the thyroid gland but it is the kind of enlargement seen in people who have goiters because their thyroids are underactive, Dr. Hamilton found. In one of his patients, giving thyroid extract with PAS prevented the gland from enlarging.

PAS, it has been found, will take up and hold a large amount of iodine from a solution. It may be that it interferes with production of the thyroid gland hormone by taking its iodine.

Science News Letter, January 17, 1953

CYTOLOGY

Ultra-Fast Freezing Keeps Heart Cells Alive

➤ CELLS FROM the heart of a chick embryo have been kept alive for one month, frozen at about 350 degrees below zero Fahrenheit, without any decrease in vitality.

Dr. Basile J. Luyet of St. Louis University, describing his experiments on ultra-rapid freezing of living tissue, told the American Association for the Advancement of Science meeting in St. Louis that frozen cells can be kept intact and alive by cooling them very rapidly—several hundred degrees per second.

Ordinary freezing causes the liquid portion of living cells to crystallize, destroying the basic cell structure. Ultra-rapid freezing, however, occurs so fast that crystals do not have time to form, Dr. Luyet said.

Ultra-rapid freezing may give scientists a valuable tool for the study of the fine structure of cells, Dr. Luyet said. He is working on a method of removing the frozen, noncrystallized liquid from a rapid-frozen cell by vacuum. This will leave a dry cell framework, or "petrified cell," that can be studied with high-powered microscopes.

Science News Letter, January 17, 1953

ASTRONOMY

Supergiant Bright Stars Pepper Magellanic Cloud

➤ CONSTELLATIONS OF blue stars in the Large Cloud of Magellan, the nearest galaxy to our own Milky Way system of stars and nebulae, contain scores of supergiant stars 10,000 times as bright as the sun, Mrs. Virginia McK. Nail and Dr. Harlow Shapley of Harvard College Observatory stated at the meeting of the American Astronomical Society in Amherst, Mass.

These Magellanic constellations are each composed of a score of supergiant stars similar to those found in our well-known constellation of Orion, the giant hunter, Dr. Shapley said. Although most of these stars are blue, there are among them a few supergiant red stars. These red stars are colossal in volume, some of them exceeding our sun by a million times.

These blue super-radiant bodies are relatively young in terms of the sun's age, the Harvard astronomer pointed out. They may have existed as giant stars for only two to three million years. Such an estimate of youth is consistent with the growing belief that the whole of the Magellanic Cloud may have been created relatively recently.

Science News Letter, January 17, 1953

GENERAL SCIENCE

Research Animals Now Ride Airline

➤ BARRIERS PREVENTING air transportation of laboratory animals are beginning to break down, in response to pleas by worried scientists who need their animals in a hurry.

Following repeated requests by scientists and a sympathetic memorandum sent out by the Civil Aeronautics Administration, at least one airline, National Airlines, has agreed to accept small laboratory animals on all flights.

Ben Stern of the CAA's office of aviation information reports to the scientific world through *Science* (Dec. 26, 1952) that the airline made only four simple conditions for the shipment of research animals. The animals must be consigned exclusively to recognized research organizations, inoffensive to passengers and crew, packaged leakproof, and the packages must be easy to handle.

Science News Letter, January 17, 1953

IN SCIEN

TECHNOLOGY

Putty Plugs Radio Leaks In Microwave Antennas

➤ A PUTTY has been developed to plug radio leaks in horns of directional microwave antennas similar to those used in the Bell system to beam television programs across the country.

Based on Thiokol, a rubber-like substance, the putty seals cracks between strips of metal forming the antenna-horn. The tiny cracks act as antennas themselves, allowing some of the microwave energy to escape in the wrong direction. When that happens, the escaping microwave program may be picked up by antennas on the same tower receiving a different program. Crosstalk interference results.

The putty "plugs" the cracks against radio leakage by forming a conducting path across the joints so that no line of electric force bridging an air gap in the joint can send off radio waves. In addition, the putty waterproofs the joint, resists sunlight, resembles aluminum in color, is adherent and remains flexible even at such chilly temperatures as minus 40 degrees Fahrenheit.

Technical details of the putty are reported in *Bell Laboratories Record* (Dec., 1952).

Science News Letter, January 17, 1953

TECHNOLOGY

Barite in Concrete Cuts Hazards From Radiation

➤ USING BARITE as an aggregate in concrete, engineers can construct buildings to withstand the blast of bombs well and also to shield persons inside from death-dealing gamma rays of A-bombs.

Working at the Nova Scotia Technical College, Halifax, under sponsorship of the Defense Research Board of Canada, K. A. Shelstad, V. E. Vaughan, and E. L. Cameron found that a barite aggregate readily produces a high-density concrete of 200 pounds per cubic foot. Ordinary concrete has a density of 145 to 150.

A maximum barite particle size of three-fourths of an inch can be used when the compressive load on the concrete is not to exceed 3,000 to 3,500 pounds per square inch. The resulting concrete materially cuts down gamma ray transmission through it.

A wall of barite-aggregate concrete four inches thick transmits only about 25% of the gamma rays striking it. A wall eight inches thick transmits less than 5%.

Experimental techniques used by the scientists while making the study are reported in the *Canadian Journal of Technology* (Dec., 1952). Durability of the concrete was not determined.

Science News Letter, January 17, 1953

CE FIELDS

PSYCHOLOGY

"Action Psychology" Irons Out Plant Problems

➤ INDUSTRIALISTS CAN get rid of more of their production problems by using "action psychology" than they can by using the "static psychology" method.

Dr. R. M. Bellows of Roger Bellows and Associates, Detroit, told the American Association for the Advancement of Science meeting in St. Louis that industrial psychologists have been "barking up the wrong tree" by dealing with isolated individuals instead of with the groups of individuals involved in industrial problems.

He said that "action psychology" looks at a problem as a whole and tries to solve it partly through discussions in which all persons concerned take part. If such techniques had been used in the past, "it is likely there would be less industrial strife, fewer misunderstandings, than exist today."

Action psychology differs from static psychology because, as the investigation of a problem progresses, changes are made in the original situation which in turn influence the findings of the survey. The whole idea is aimed at improving the situation as the investigation goes along.

Static psychological studies merely investigate the existing problem. At the end, the findings are written up into a literary report which often is shelved without action.

Science News Letter, January 17, 1953

NUTRITION

5,000-Calorie Fluid Diet for Non-Eaters

➤ PATIENTS NEAR death because obstructions in their digestive tracts kept them from eating enough improved dramatically when given a high calorie liquid diet consisting primarily of a 40% peanut oil emulsion, three Chicago doctors report in the *Journal of the American Medical Association* (Dec. 27, 1952).

The three reporting are Drs. Edward M. Goldberg, Irving F. Stein, Jr., and Karl A. Meyer of Northwestern University Medical School, Cook County Hospital and the Hektoen Institute for Medical Research.

Many of the 90 patients got between 4,000 and 5,000 calories a day, and some got more than 5,000 calories. There were over 14 ounces of fat in the daily diet. Those with benign obstructing conditions gained weight markedly, and even those with cancerous obstructions showed benefit if the cancer was not far advanced.

Patients with obstructions of the mouth, esophagus or stomach who require operations can only take a liquid diet. Such patients often enter a charity hospital weeks or months after the start of symptoms, and as a result are so severely undernourished that operating on them is more than usually risky, the doctors point out. They therefore made this special study to see whether a high calorie liquid feeding could be given either as the only food or as a supplement to other food to give the patients the strength and weight they needed.

The results showed such liquid feedings could succeed, even though about half the patients suffered mild and transistory symptoms of vomiting, diarrhea or constipation.

Science News Letter, January 17, 1953

PUBLIC HEALTH

Heart Disease Deaths To Climb This Month

➤ DEATHS FROM diseases of the heart and blood vessels will be on the up-grade from now through March. Reasons for the increase, expected to be about 13% above the monthly averages, are:

1. More pneumonia, bronchitis and other illnesses at this season which put more strain on heart and circulation.

2. Winter activities calling for greater than usual physical exertion, from stoking the furnace to pushing stalled cars.

For the winter months, the American Heart Association in New York gives the following heart-guarding suggestions:

1. Avoid self-diagnosis; 2. avoid overexertion; 3. get plenty of rest; 4. avoid overweight; 5. avoid infections; 6. don't worry.

Science News Letter, January 17, 1953

METEOROLOGY

Stormy Weather Now Duplicated in Laboratory

➤ LARGE-SCALE EDDIES, huge cyclones and anti-cyclones which are the start of stormy weather, have been duplicated on a small scale in the Weather Bureau's laboratories in Washington.

One discovery from this model of the atmosphere was that large scale eddies grow from relatively small disturbances when the atmosphere is in a condition of dynamic instability. "Relatively small" disturbances in the open air are about 50 to 100 miles across. In the laboratory they were produced on a model which looked like a curved bowl turned upside down. Over this bowl was placed a plastic cover. The "atmosphere" existed in between. The top of the bowl was the North Pole.

Tobacco smoke outlined the eddies. The scientist who built the model, Lester F. Hubert, first tried cigarette smoke, then switched to a generator which "smoked" a brass pipe full of tobacco.

This is one of the first models of the atmosphere in which air is actually used. Other models have used liquids to represent the atmosphere.

An account of the experiments appears in *Transactions of American Geophysical Union* (Dec., 1952).

Science News Letter, January 17, 1953

INVENTION

Powerful Synchrotron Receives Patent

➤ A PATENT on the synchrotron, powerful atom-smasher, has been granted, almost six years after it was applied for. The patent is assigned to the Atomic Energy Commission by Dr. Edwin M. McMillan, professor of physics at the University of California. Patent number is 2,624,841.

The university has a 300,000,000 electron volt (300 Mev) synchrotron based on Dr. McMillan's patent. The synchrotron accelerates electrons almost to the speed of light. They are first accelerated to 2 Mev by operation of the machine as a betatron. Then the electrons are boosted to 300 Mev by applying an alternating current to the accelerating electrode. The magnetic field is rapidly increased to compensate for the increase in mass of the electrons at higher energies.

Science News Letter, January 17, 1953

MEDICINE

No Basic Cause For Alcoholism

➤ LOOKING FOR "basic causes" of alcoholism is "futile," declares Dr. Albert D. Ullman of Tufts College, Boston.

The underlying causes, he says, may be any factors which produce tension. Such factors may be experienced by anyone in the course of his life.

Treatment should be directed toward substituting other tension-reducing activities for drinking. The substitute activities should help the alcoholic deal with the realities of situations rather than anesthetize himself against them.

Dr. Ullman gives his views in the *Quarterly Journal of Alcohol Studies* (Dec., 1952).

Science News Letter, January 17, 1953

PUBLIC SAFETY

Full Auto License Only Upon Marriage

➤ A FULL-FLEDGED driving license would be issued only with a marriage certificate for men under 25 years of age, if Dr. A. R. Lauer, Iowa State College psychologist, had his way.

Married men have less driving trouble than single men and are a much better insurance risk, Dr. Lauer's study of a thousand drivers has shown. Young men drive more at night and have more accidents than men with more driving experience.

Driver training for boys should start early, since his studies reported to the American Association for the Advancement of Science meeting in St. Louis show that men benefit from training only if under 20 or over 40.

For women, formal driver training lowers accidents no matter what their age.

Science News Letter, January 17, 1953