

BIOCHEMISTRY

**White Cells in Blood
Last Over Dozen Days**

► WHITE CELLS in human blood live on the average 12 days, 19 hours and 12 minutes, Drs. Daniel L. Kline and Eugene E. Clifton of Yale University School of Medicine, New Haven, Conn., report.

White blood cells play an important part in defending the body against disease germs. Their life span has heretofore been estimated to vary from less than an hour to three weeks.

The Yale scientists got their figure for the white blood cell's lifetime by giving small doses of radioactive phosphorus to patients whose white blood cells were normal. The radioactive chemical then became incorporated into the desoxypentose nucleic acids of the white blood cells as they were formed in the bone marrow.

A little blood, less than an ounce, was taken from the patients 24 and 48 hours after they were given the radioactive chemical and then every two days for three weeks. By separating the white cells from the rest of the blood and examining them for radioactive phosphorus, the scientists were able to tell how long these tagged cells stayed in the circulation and lived.

Details of the experiments and the calculations are reported to fellow scientists in *SCIENCE* (Jan. 4), the official publication of the American Association for the Advancement of Science.

Science News Letter, January 19, 1952

AERONAUTICS

**Develop Jet Airliners
Without Government Money**

► GOVERNMENT FINANCIAL aid is not needed in the United States to develop jet-propelled commercial transport airplanes, Admiral Emory S. Land, president of the Air Transport Association of America, stated in Washington. But government money is needed for testing jet aircraft so that the agencies having to do with their certification will have facts on which to base approval of such planes.

Several of the U. S. carriers are studying the jet problem, he stated, and have definite ideas as to the type of jet transport which should be developed for commercial use. They have a strong feeling that jet transports should be developed by the industry in the same manner as the present large, luxurious transports now in use were developed.

America now has several military bombers which are powered by jet engines. The eight-engined Boeing XB-52, now being readied for flight, is one. The six-engined Air Force bomber, the Boeing B-47 which crossed the continent in 1948 at an average speed of better than 600 miles an hour, is another. But America is not yet building

a jet-propelled commercial transport as far as is known. However, it is known that several American airplane builders have such planes under consideration.

Britain has constructed a jet-propelled airliner which has been making successful air test flights during the past two years. Canada has also constructed one which has already visited several American airports. Both of these nations expect to put jet-propelled transports into commercial use in the near future. They will be on long-distance routes where rapid travel is desirable.

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PUBLIC HEALTH

**Safety Rule for
Skiers: Go Slow**

► SINCE A cold, snowy winter is forecast for this year, many of you will be going skiing. Probably a good many will take up this winter sport for the first time.

The sport is far less dangerous than it looks, yet accidents and injuries do occur. One important safety rule for the skier is, Go Slow. In skiing as in motoring, a big factor leading to accidents is too much speed in relation to conditions. Too often a beginner will attempt a steep slope without having learned first how to slow up and stop. Or he will grow impatient at the pace of the learning process and will attempt feats that may look easy but are far beyond his skill.

It takes more strength and skill than the beginner realizes to check himself safely at the mile-a-minute speed which may be developed down steep runs.

The novice on skis is in less danger than the skier who has been out a few times. The latter is inclined to be overconfident and to pick slopes too steep for his skill and strength.

Stop before you get tired is another important safety rule in skiing as in other sports. Fatigue has been found to be a large factor contributing to skiing accidents. When you are tired you are less likely to attend closely to what you are doing and may miss seeing little irregularities of trail or slope. Visibility is not so good in late afternoon and this makes it harder to pick a safe course even if you are not tired.

Even though first aid stations, safety patrols and special trails for novices are available at many ski resorts, skiing, like swimming, should not be undertaken alone. Even a slight accident may end disastrously if there is no one along to help or to get help.

Beginners should remember that sudden changes in temperature and weather conditions may completely alter the safety of a trail. Soft snow hardens and becomes crusted. Hard packed trails become icy with use. At the place where you made turns safely an hour ago, you may find yourself skidding into the woods at greatly increased and dangerous speeds.

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IN SCIEN

BIOPHYSICS

**Ultrasonics Possible
Aid to Eye Cataracts**

► ULTRASONIC WAVES, sound waves that vibrate so fast they cannot be heard by human ears, are giving doctors a new approach in the search for a medical cure for cataracts of the eyes.

The hope that ultrasonic treatment itself might even become a cure for cataracts was expressed by Dr. Oscar Lavine of Washington, D. C., at the meeting of the Panamerican Congress of Ophthalmology in Mexico City.

So far, this hope has not been realized. But Dr. Lavine and associates at St. Elizabeth's Hospital, the National Institutes of Health and the Catholic University of America have been able to produce cataracts in the eyes of dead calves by ultrasound treatment.

By using a different frequency of ultrasound waves, Dr. Lavine believes it might be possible to break up cataracts.

Even if this never can be done, the ultrasonic cataracts, which can be produced within seconds in any desired area of the eye lens and of any size, should give scientists a good tool for testing potential cataract-curing medicines.

Surgical operation is the present method of curing this blinding eye condition.

Science News Letter, January 19, 1952

MEDICINE

**Diabetics More Likely
To Have Tuberculosis**

► DIABETES PREDISPOSES to tuberculosis, five medical scientists of Philadelphia declare in a report to the National Tuberculosis Association.

The five are: Dr. Katharine R. Boucot of the Woman's Medical College of Pennsylvania, Dr. David A. Cooper of the University of Pennsylvania School of Medicine, Dr. Edward S. Dillon of Philadelphia General Hospital, Paul Meier, statistician of the Philadelphia Tuberculosis and Health Association, and Dr. Russell Richardson of the University of Pennsylvania Hospital.

Their statement is based on a survey of tuberculosis among diabetics conducted under the joint auspices of the Philadelphia County Medical Society and the Philadelphia Tuberculosis and Health Association.

Twice as much total tuberculosis was found among the diabetics as among the non-diabetics in this survey. Almost three times as much active tuberculosis was found among the diabetics as in an industrial group in the city.

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CE FIELDS

PSYCHOLOGY

Air Force Seeks to Spot Arctic Weather Types

► THE AIR FORCE is trying to find out how to tell an Arctic type man from the rest of us.

Tests now being conducted on a group of volunteer airmen at the Air Force School of Aviation Medicine at Randolph Field, San Antonio, Tex., may be valuable in revealing the sort of temperament, physical constitution and background that enable a man to adapt himself to working at Air Force bases in Arctic regions. The tests are being conducted by Lt. Robert A. McCleary, a research psychologist formerly of Johns Hopkins University in Baltimore.

The volunteer Arctic airmen, dressed in Air Force clothing designed for Alaska duty, do tasks with their hands in a chamber chilled to 50 degrees below zero. They all work on a box designed for the tests by Lt. McCleary. Roughly the size of a tool chest, it is securely fastened with bolts and safety wire. The airmen must open the box with pliers and a wire cutter, take out the brush assembly they find inside, disassemble that, put it together again and then finally lock it back in the box.

The skills utilized in performing these tasks, according to Lt. McCleary, are the same used by ground crew repairmen working on Arctic air base maintenance lines.

Lt. McCleary hopes, by comparing results from different airmen, to learn something about the effect of extreme cold on mechanics' work. In addition, he should be able to find out why some men do better than others in cold weather.

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MEDICINE

Seasickness Remedy Used For Ulcerative Colitis

► DRAMAMINE, BEST known as a remedy for seasickness and other motion sickness, may prove to be a cure for chronic ulcerative colitis.

Good results with this medicine in 14 patients are announced by Dr. Clifford C. Wilson of Kansas City in a report to the Kansas City Southwest Clinical Society.

Four of the patients were "candidates for surgical intervention" but did not have to be operated, thanks to the dramamine treatment, Dr. Wilson states.

Chronic ulcerative colitis is a disabling disease for which neither cause nor cure is known, Dr. Wilson points out. Some

authorities believe it has a basis in emotional difficulties because many, if not all, patients have neurotic traits. Others think allergy to foods plays an important role. Because dramamine has the combined effect of a mild sedative and a mild antihistaminic, useful in allergy, Dr. Wilson decided to try it. It has the additional advantages of being nontoxic when taken over a long period, nonhabit forming and inexpensive.

He prescribed it to be taken before meals and at bedtime, along with a high protein low residue diet. Blood transfusions were given when needed to correct anemia. After two years experience with it, Dr. Wilson believes that "the more serious cases of chronic ulcerative colitis can be controlled satisfactorily and indefinitely."

"With control over a long period," he states in his report, "it seems reasonable to assume that a cure will be the end result."

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MEDICINE

Discover Body Defense Against Pneumonia

► AN "IMPORTANT defense" of the body against particularly dangerous pneumonia and streptococci germs has been discovered by scientists at Washington University School of Medicine in St. Louis.

The defense is carried on by certain white blood cells. Before the body has had time to build up specific antibodies to germs, these white cells mobilize and trap the germs against the walls of the blood vessels. Sometimes the white blood cells trap the germs against other, adjacent white blood cells. After trapping the germs, the white blood cells act like other scavenger cells from the liver and spleen, and devour the germs.

The germ-trapping and devouring action of the white blood cells, called intravascular surface phagocytosis, was found in researches by Drs. W. Barry Wood, Jr., William D. Perry, John W. Berry and Miss Mary Ruth Smith. They report details of the research to fellow scientists in an official publication of the Rockefeller Institute for Medical Research, the JOURNAL OF EXPERIMENTAL MEDICINE (Dec. 1).

When bacteria get into the blood stream, the patient is seriously ill, the scientists point out. Even with sulfa drugs, penicillin and other antibiotics, this state must "still be looked upon as the forerunner of possible disaster."

Because of the often grave results of blood stream infection, doctors have often looked on the blood as having only the weaker sort of anti-germ defense. This view has been taken particularly with regard to pneumonia germs and streptococci which have capsules that protect them from being devoured by scavenger cells from the liver and spleen.

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GEOLOGY

Oil Shale and Coal Are Future Energy Sources

► OIL SHALE and coal will furnish the power of the future, geologists of the nation agree.

The American Geological Institute in Washington in a survey finds that these experts are not confident that atomic energy will find substantial industrial use even by the year 2000. Water power and solar energy will also play a role minor to processed oil shale and coal.

By 1975 direct production of natural petroleum will be past its peak, the geologists agree, and oil imports will be insufficient to meet America's needs. The large oil shale deposits of the Colorado plateau and the low grade coals of the Midwest and plains area will supplement the declining supplies of natural petroleum. Powdered coal will replace industrial fuel oil. Coal production should double within 25 to 30 years, with most of this increase used as liquids or gases rather than in solid form.

New light-weight metals, such as titanium, will find extensive use in the future, the geologists believe, because methods will be developed to extract them more easily from the earth.

Twice the present supply of 15,000 geologists will be needed in the near future to explore for new mineral supplies by geological and geophysical methods, aid construction industries and work on agricultural problems, the Institute predicts.

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INVENTION

Fiberboard Soybean Glue Is High-Grade at Low Cost

► THE SOYBEAN, rapidly becoming one of America's principal agricultural crops, is the basis of a glue particularly suitable for the manufacture of high-grade, low-cost fiberboard made by a process awarded a patent recently. It is for use primarily in the manufacture of industrial laminated paper containers such as cartons, boxes and barrels.

Inventors are Glen E. Babcock, Vernon L. Johnsen and Allan K. Smith, Peoria, Ill. Patent 2,580,391 was the award. Rights are assigned to the United States government as represented by the Secretary of Agriculture.

The glue is about 20 parts soy flour and soy protein, more of the flour being used as a rule than the protein. To this is added from 2.5 to 10 parts of a solution containing an ammonium resin and its alkali metal salt, a similar amount of saponified rosin and from 10 to 15 parts of an 8% sodium hydroxide solution. The fiberboard made with this glue has good water resistance and high strength.

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