

BIOCHEMISTRY

Malignant Tumors Alike In Chemical Structure

► EVIDENCE that all highly malignant tumors are basically alike biochemically is reported by a husband and wife research team.

The finding supports the theory that, if all tumor cells are alike, then perhaps when a chemical cure is found for one type of cancer, it may be effective against almost all cancers.

Drs. Anna Kane Laird and A. D. Barton, working at the Argonne National Laboratory, Lemont, Ill., report the consistent biochemical pattern in malignant tumors in *Science* (July 6).

They found, without exception, a consistent biochemical pattern in the cells of a wide variety of malignant tumors. Included are primary and metastatic human tumors, induced and transplanted animal tumors, carcinomas as well as sarcomas in three different animal species.

In all the tumors studied by the scientists, the chemical components of the cells broke down in equal percentages, indicating tumor cells have a basic architecture. If this is true, the scientists reason, then it could be expected that a common pattern will mean a common cure.

The scientists also state the study is the first demonstration of the theory that tumor cells are primitive cells. This supports previous studies made by Dr. J. P. Greenstein of the National Cancer Institute, Bethesda, Md., who showed that, for a wide variety of biochemical properties, malignant tumors have a narrower range of values than do normal tissues.

Science News Letter, July 21, 1956

MEDICINE

Devise Tennis Game For Those Over Fifty

► TENNIS for anyone over 50 is now possible with the development of a new "take-it-easy" tennis game devised at the University of Florida.

Named "Florida tennis," the game is essentially the same as regulation tennis with two major modifications. The court is marked off so it is only half as wide as the usual singles court, and the ball must always bounce once before being returned.

These changes eliminate sudden starting and stopping, the dash back into position, the lunge for passing shots and power volleys at the net. The new game also makes it possible "for lovers of the sport to keep on with it long after aging hearts and limbs would have relegated them to a spectator role under the old rules."

Tests with older persons playing a regular game of tennis and "Florida tennis" showed that the modified game caused the pulse rate to rise only a few points, while regulation tennis raised it 20 to 30 points. More important, however, "the elderly person's pulse rate did not return to normal

during a rest period after a regulation game," as did a younger person's.

Harry J. Miller of Sarasota, Fla., outlined the "Florida tennis" rules for persons under 40 and over 40 as follows:

For players under 40:

In singles, ordinary tennis rules prevail except the court is only half as wide as in a regulation game. The ball is served from behind center of base line into the service (front) court.

In doubles, the conventional rules are used, except that players take turns hitting the ball after it is served. As each player hits the ball, he retires out of his teammate's way, as in ping-pong.

For players over 40:

In singles, the usual rules apply except that the net may be lowered as much as four inches from normal tennis height of 36 inches at center and the ball must always be hit into the back court after the serve. This eliminates running. If it falls into service court, it is out of bounds.

In doubles, the same rules apply as for under-40 players, but the lower net may be used.

The "take-it-easy" tennis game is fully described in the American Medical Association's publication, *Today's Health* (July).

Science News Letter, July 21, 1956

BIOCHEMISTRY

White Cells Control Incurable Disease

► INJECTION of special white blood cells may provide control of an incurable disease, systemic lupus erythematosus, in which many of the organs of the body may be seriously damaged.

In studies by Dr. Nathaniel B. Kurnick of the University of California at Los Angeles Medical School and the Long Beach Veterans Administration Hospital, 16 patients long and gravely ill with the disease were injected with white blood cells containing a protein called DI (DNase inhibitor).

Within one week, characteristic skin lesions of the disease cleared up in all patients. Within six weeks, the severe pains around joints, muscles, the heart and lungs, which usually accompany severe cases, left them.

Systemic lupus erythematosus appears to be caused by a rapid aging and death of white blood cells followed by production of allergic antibodies against the dead cells' remains. It is the antibodies that apparently cause the painful symptoms.

DNase makes white blood cells age by grinding DNA, the stuff of which genes are made, into small grains. DI ties the hands of DNase and by so doing permits cells to divide and restore their youth.

Dr. Kurnick believes that systemic lupus erythematosus may be due to DNase not being restrained by DI. The injected cells apparently release their DI which prevents the gene-pulverizing action of DNase.

The work was supported by the American Cancer Society.

Science News Letter, July 21, 1956

IN SCIEN

BIOCHEMISTRY

Foresee Series of Drugs Built to Order

► A SERIES of drugs built to order to control high blood pressure are expected to result from research reported in *Science* (July 6).

One such drug, BAS, has already been synthesized and found to reduce blood pressure of patients with hypertension. Only small doses were needed, and these did not seem to cause harmful side effects, Drs. D. W. Woolley and E. N. Shaw of the Rockefeller Institute for Medical Research, New York, have found.

The clinical trials of BAS were made in cooperation with Dr. Robert Wilkins of the Massachusetts Memorial Hospital.

Chemical name of BAS is 1-benzyl-2,5-dimethyl serotonin. It is related to serotonin, a natural body chemical found in blood serum, and was devised to block serotonin's action in the body.

In designing the anti-serotonin drug, Drs. Woolley and Shaw had to make it effective when taken by mouth, with a low inhibition index and not reversible in its action, and lacking in effect on the central nervous system.

Early investigations of antiserotonins showed some of them affected mental processes, the scientists report.

BAS is called an antimetabolite because it acts antagonistically to the hormone serotonin. Further experiments with other antimetabolites blocking action of other body chemicals may yield drugs for treating both infectious and non-infectious disorders.

Science News Letter, July 21, 1956

BIOCHEMISTRY

English Sewage, African Soil Give Same Antibiotic

► SEWAGE from Oxford, Eng., and soil from East Africa have yielded the same or very closely related antibiotic.

The Oxford sewage antibiotic is called micrococcin because it came from germs of the *Micrococcus* family.

The East African antibiotic came from germs of the *Bacillus pumilus* group. The name micrococcin P is now suggested for it, since its close relation, if not identity, with micrococcin has been discovered.

Studies showing this relation are reported by Drs. E. P. Abraham and N. G. Heatley of the Sir William Dunn School of Pathology, Oxford, and Drs. P. Brookes, A. T. Fuller and James Walker of the National Institute for Medical Research, London, in *Nature* (July 7).

Science News Letter, July 21, 1956

CE FIELDS

PSYCHOLOGY

Why Alcohol Seems To Loosen the Tongue

► WHY it seems that "bending the elbow loosens the tongue" is explained by pre- and post-drink tests at Michigan State University, East Lansing.

Under the influence of alcohol, from a moderate drink, 30 young college men relaxed their standards of conformity, so that when asked in the test to name trees rapidly they gave such answers as "big tree," "family tree" and "Christmas tree."

Since all plausible responses were counted, the drinkers made slightly higher scores on this part of the test than the non-drinkers.

"This is probably what happens in social situations where alcohol is said to increase fluency," state Drs. Peter Hartocollis and Donald M. Johnson of Michigan State University, the scientists who made the tests.

When it came to a test of fluency in producing words, the drinkers did not score as high as the non-drinkers. An example of such a test was: Give in five minutes words for a place or building for athletic exercises beginning with the letters c, d, g, h, t.

The findings are reported in the *Quarterly Journal of Studies on Alcohol* (June).

Science News Letter, July 21, 1956

ASTRONOMY

Earth Satellite Observers Given First Instructions

► OBSERVERS of the earth satellites to be launched during the International Geophysical Year starting next July 1 have been given their first instructions.

The visual observing program, designed to obtain the first and last scientifically valuable records of the satellites, will be known as MOONWATCH. It offers "a unique opportunity for the visual observer to make a significant scientific contribution," Dr. Fred L. Whipple, director of the Smithsonian Astrophysical Observatory, Cambridge, Mass., states in a special announcement.

Should a satellite's radio fail or some satellites be launched without self-contained radios, full responsibility for the first critical observations will fall on the shoulders of volunteer visual observers.

Although applications are now being taken from "seriously interested" amateur astronomers, the announcement makes it clear that only those with patience, skill and reliability need apply.

"No 'lone-wolf' observer can contribute usefully to the program," the announcement states.

Trackers of the earth-circling moonlets will be divided into groups, about 30 be-

ing considered the most for any one group. An observer spotting the satellite will not move his telescope to follow its motion, but immediately reconstruct from memory the exact path the satellite took against the background of stars in his field of view.

The group leader will transmit observations to the central computing bureau, expected to be set up at the Smithsonian Astrophysical Observatory on the grounds of Harvard College Observatory.

The National Academy of Sciences, through the National Science Foundation, has assigned to the Smithsonian Observatory responsibility for the optical tracking program. Dr. Armand N. Spitz is coordinator of visual observations.

Some idea of the difficulty of the observations can be gained from the fact that the satellite's apparent speed will be equivalent to that of an object crossing the moon's face in from one-half to a few seconds.

Science News Letter, July 21, 1956

ASTRONOMY

Find Evidence That Universe Expansion Slows

► THE RATE at which the universe is expanding shows signs of slowing down at the most distant points visible with the giant 200-inch telescope atop Mt. Palomar.

This unexpected finding, contradicting what has previously been thought, is now being studied by astronomers at Mt. Wilson and Palomar Observatories in Pasadena and at the University of California's Lick Observatory near San Jose. (See SNL, Dec. 17, 1955, p.387.)

Instead of accelerating at a rate that grows faster and faster directly with distance, there is now evidence the rate increases more slowly than had been predicted for the very faintest objects. These are not single stars like the sun at all, but swarms of billions of stars formed into clusters known as galaxies. The Milky Way galaxy in which the sun and the earth are located is but one of millions of galaxies.

These huge clusters of billions of suns still seem to be moving away from the solar system with more speed than the nearer ones. It is the speed of recession for the most distant objects that, although greater than that of nearer objects, is not as great as had been previously thought.

The so-called law of the red shift, by which a galaxy's light is shifted toward the red end of the spectrum by an amount that varies directly with distance, does not seem to hold for very far-away star clusters.

A study of objects in different directions in space showed the expansion rate is the same in all directions.

The survey of available observations on the red shift of galaxies was made by Drs. M. L. Humason and A. R. Sandage of Mt. Wilson and Palomar Observatories and Dr. N. U. Mayall of Lick Observatory. It is reported in the *Astronomical Journal* (April May).

Science News Letter, July 21, 1956

AERONAUTICS

Air Traffic to Jump Thirteenfold by 1980

► BY 1980 the world's scheduled airlines will be flying 480,000,000,000 passenger miles annually, the International Civil Aviation Organization of the United Nations has predicted.

This thirteenfold increase over today's air travel mileage will mean a "vast increase" in air traffic, and the ICAO is already looking 20 years ahead to find methods of keeping the world's airways from becoming as congested as the world's highways.

In 20 years, one report states, atomic-powered aircraft freighters will be flying non-stop between any two points on the earth's surface at supersonic speeds of 1,000 miles per hour.

The same report points out that the DC-8 and the Boeing 707, which will be put into service in the next few years, will be capable of traveling at 600 miles per hour, carrying 150 passengers on non-stop flights of up to 4,000 miles. It is unlikely that planes will ever carry more than 150 passengers, the report says.

However, in 20 years time, civil transport aircraft weighing upward of 1,000,000 pounds and powered by the atom will be in regular service.

The report also foresees that in 20 years all larger airports will be able to handle the heavier and faster aircraft as well as aircraft that take off straight up.

The helicopter, the report points out, has proved more complicated and expensive than anticipated, and short take-off and landing aircraft are still too far away from practical use to be included in plans for 1980.

Science News Letter, July 21, 1956

PLANT PHYSIOLOGY

Cold Found Aid to Tomato Plant Growth

► COLD NIGHTS will not hurt tomato plants.

In fact, a little cold weather during the early stages of growth may even encourage the plants to put out more buds.

Night temperatures in the low 50's during the early seedling stages stimulate plants to yield an average of 65% more tomatoes than other plants grown at the usual 65 to 70 degrees. Drs. S. H. Wittwer, and F. G. Teubner of the Michigan State University department of horticulture found the cold night temperatures most effective four to six weeks before the first flowers opened.

The scientists found growth in general is superior in the cold-exposed plants. In four varieties of tomato plants tested, those exposed to cold had more flowers, thicker stems, stronger sidshoots and leaves closer together.

Below-freezing temperatures, however, are harmful to plants.

Science News Letter, July 21, 1956