

To Be a Scientist

(Continued from p. 315)

on its gene bases or tie it to the other operations and to the cellular architecture revealed by the electron microscope.

...A few of the code words in the genetic dictionary have surrendered their meaning to us but this is the barest beginning. The great dictionary of the genetic code is still to be compiled and the meaning of its code words accurately defined.

We know already that there is a safety factor of redundancy built into this system to insure survival—that there is more than one way of saying the same thing. This factor of redundancy raises a question as to how greatly the established patterns can be altered without seriously affecting the organism.

Only at Beginning

Those of us who want to establish safety factors for exposure to radiation would like to know the answer to this question. Very interesting also is the question as to what kind of physics and chemistry these macromolecules possess that enable them to reproduce themselves without the aid of enzymes.

We have just begun to explore the physics and chemistry associated with big molecules and have learned many unexpected things about viscosity and other characteristics but again this is only the beginning.

There is much more that we would like to know about how the macromolecules of DNA began to operate this way in the first place, thereby enabling the life process to originate and evolve, and how we can use their unique characteristics for developing new forms of life in a beneficial way.

Many Problems in Science

These are only a few of the many problems in this very inviting field of modern science. Certainly one could take each major field of science today and list questions of this kind which are awaiting the best efforts of young people who plan to find their future in science. The giant machines by means of which high energy physics hopes to penetrate further into the constitution of the nucleus beckon to many. Many others will be intrigued by cryogenics and the potentialities of lasers or by the intricate problems associated with information theory and computers. The barest summary of opportunities for research would take us far into the night...

I must say in closing that no one can really tell you what it means to be a scientist. There are almost as many different kinds of scientists as there are different kinds of people, but even apart from that, no one can *tell* you. You can only find out what being a scientist means from the intensely satisfying experience of your own efforts.

I cannot help feeling tonight as I look around this audience of young people who have already made brilliant beginnings that there will be notable and rewarding achievements for you in the years that lie ahead.

• Science News Letter, 85:314 May 16, 1964

BIOTECHNOLOGY

Brain Tumors Detected By New Complex Camera

► FAST PICTURES of radioactive substances injected to detect brain tumors and defects in internal organs are being made by a new complex camera so recently developed that there are only four in existence.

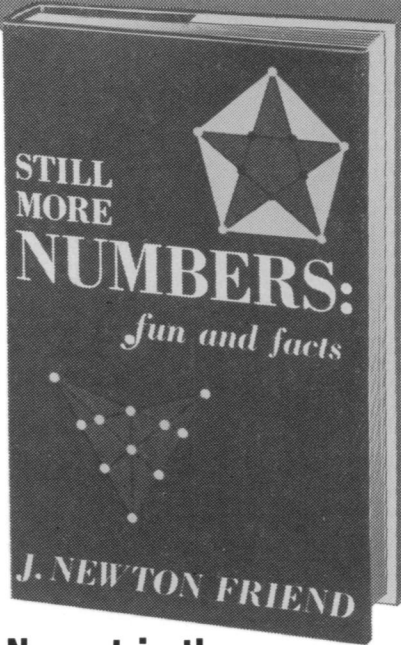
Labeled isotopic compounds can be seen more accurately in suspected organs ten times faster than with previously used scanning-type apparatus.

Research teams from the Veterans Administration Research Hospital and Northwestern University Medical School, Chicago, are investigating additional uses of the equipment on animals.

The scintillation camera is capable of picturing on Polaroid film two-dimensional distribution of radioisotopes and then following the rate at which these isotopes may move into and out of such organs as the liver, thyroid and kidney. Actual photographs of brain tumors provide additional valuable data as to their size and location, explained Dr. George C. Henegar, who is on the staffs of both Northwestern and the VA Hospital.

The original model of the camera, which is manufactured by Nuclear-Chicago Corporation, was developed at the University of California. The VA Hospital in Iowa City, Iowa, has one of the cameras, and Ohio State University, Columbus, has a smaller version.

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