

M.D.'s Shackled by Rules

Rules caused by fear of nuclear "hazards" subject doctors to unnecessary controls on the use of radioactive substances

► FEAR of nuclear "hazards" has shackled medical scientists in many countries with unwanted and unneeded controls, the chief doctor of the United Nations International Atomic Energy Agency in Vienna, Austria, has charged.

"Radioactive compounds are no more dangerous than other drugs," said Dr. Herbert Vetter, head of the IAEA's medical isotope section.

"Even the radioisotopes' property of increasing the natural mutation rate is shared by many nonradioactive drugs."

Available data on so-called "safe radiation doses" are not useful for treating patients, the UN specialist believes. Safety limits have thus far been based on "continuous exposure of radiation workers" and so are not comparable to one-shot exposures for sick people. Some radioisotope tests were introduced into routine clinical practice as "cheap, simple and reliable," he said, before their overtones were clearly understood.

Many countries have not even set standards of practice, Dr. Vetter said, and in others hospital committees make the decisions.

"Some countries have government regulations so stringent that they hamper orderly progress of nuclear medicine and even deprive patients of the benefits of diagnostic radioisotope procedures."

He urged the medical profession to combat the "encroachment" of regulations mainly by setting "standards of good radioisotope practice."

The International Commission on Radiation Units and Measurements has now appointed two task forces to explore the problem. One is working on definitions, units and symbols for internal dose calculations; the other will standardize methods of assessing doses.

IAEA itself, said Dr. Vetter, is now collecting data scattered in the world's science and medicine journals. It will determine safe doses for people of each age group and for each disease.

Leukemia Cure Hinges On Way Virus Behaves

► SCIENTISTS have proof that a virus causes leukemia, at least in mice, but effective treatment hinges on further research that would show how the virus works to make the blood-forming organs cancerous.

There are two theories: Either the virus transforms a normal cell into a tumor cell and disappears, or it "short-circuits" some mechanism of the healthy body and continues to aid cancer growth.

If the first theory is true, said Dr. Marvin A. Rich of Philadelphia's Albert Einstein Medical Center, treatment would be with drugs—the use of chemicals to kill the tumor cells. If the second theory is proved and the virus remains in the body, the cure probably would be found in killing the virus, possibly with a vaccine, and thus restoring the body's normal control mechanisms.

Dr. Rich, who discovered the Rich virus, one of several known to cause mouse leukemia, reported to the Ninth International Congress of Biology in Moscow on the present status of leukemia research, which appears to stand at a figurative fork in the road.

No one has yet proved that a virus causes leukemia in humans, although research points in this direction.



Cornell Aeronautical Laboratory

CRASH DUMMY—Safety research may be simplified by computer simulation of automobile accidents. Engineers at Cornell Aeronautical Laboratory, Buffalo, N.Y., analyze a manikin used in crash tests. The manikin will be represented mathematically in a computer program, and then results from the actual impact tests will be compared with those from the computer.

PHYSIOLOGY

Cell Disruptions Noted

► THE PATIENT search for the biological basis of mental illness is beginning to yield solid evidence of the most fundamental kind.

Scientists engaged in this search accept the theory that an emotional ill must be reflected somehow in the physiology of the brain. But how is such a link found in the intricacies of the brain? And once found, how can scientists tell whether the chemical electrical abnormality is a cause or result of mental disease?

An Englishman, Dr. David Murray Shaw, has not proved any cause and effect relationship, but he has found a "gross" disturbance at the cellular level in manic and depressed patients.

During depression, patients retained half again as much cell sodium as normal people, while manic patients had an increase of 200%. On the other hand, potassium concentrations in the cells of depressed patients were lower than normal.

Such abnormalities represent a major disruption in the sodium-potassium equilibrium of cells, a disruption that is particularly significant in light of the theory that brain cell excitability de-

pends upon the proper distribution of these ions across the cell membrane.

Dr. Shaw, who did his work at the West Park Hospital in Epsom and the M.R.C. Laboratories in Surrey, noted that sodium levels return to normal directly upon the patient's recovery from depression or mania. Potassium levels, however, do not.

Dr. Shaw's research was not done directly upon the brain cell itself, but he believes that these abnormalities, which he found to exist widely in the body, also exist in cells of the central nervous system.

He said in the *British Medical Journal*, July 30, 1966, that the biochemical changes observed are "gross to a degree seen up to now only in advanced cancer and similar wasting diseases."

Admitting several assumptions, Dr. Shaw gave a possible explanation for mental disorder: If this severe ionic disturbance is true of the brain, he said, then the manic and depressed patients will have "less active synapses," in other words, duller circuits between the nerve cells.