

GENERAL SCIENCE

**Another Smyth Report
On Peaceful Fusion Urged**

By WATSON DAVIS

► WHAT THE SCIENTIFIC WORLD needs is another Smyth report. It may be difficult in these days of continuing, rigid secrecy in most matters, atomic, missile and aerodynamic, to remember back to the days just after V-J day and explosion of atomic bombs over Hiroshima and Nagasaki.

Dr. H. D. Smyth, Princeton professor and later to be a commissioner on the Atomic Energy Commission, had written a best-seller-to-be and the extraordinary story of what fission wrought was issued with commendable completeness and promptness under Government auspices.

There had been a blackout on nuclear research and applications from the middle of 1940 until the latter part of 1945.

Even during World War II, the discovery of the fission of uranium in Germany (1939) was published and made known to the whole world, whether because of the persistence of the habit or custom of freedom of scientific publication or whether because of the lack of realization by the Nazis as to what it could mean.

Since the Smyth report, there has been an effective embargo on telling about new atomic discoveries.

Most of what we know about the thermonuclear reaction that dangled the H-bomb over our heads has been leaked out in surmises and speculations, mainly by persons on the fringe of the atomic program or working outside the restrictions of the Atomic Energy Commission.

Concerning the application of fusion to peaceful power, the Russians have told more about the basic processes involved than the United States has.

Dr. Smyth should write another report. It is long overdue.

(Reprinted from *Chemistry*, Dec., 1956).

Science News Letter, January 5, 1957

MEDICINE

**VA Using Giant Cobalt
Machine Against Cancer**

► A RADIOACTIVE COBALT machine has been put into operation to treat patients with deep-seated cancers at the Veterans Administration research hospital in Chicago.

The machine weighs 16 tons and is housed in an underground room two stories high. It is controlled by pushbuttons on a control panel located in another room shielded with walls of concrete and earth two feet thick. The operator in the control room watches the action of the machine through a periscope.

In the treatment room, the patient is placed inside two metal rings that revolve in opposite directions. The inside ring contains the radioactive source and moves back and forth while being turned in a full circle around the patient by the larger,

outside ring. These two types of motion allow a maximum amount of radiation to be aimed at the cancerous tissue while protecting healthy tissue, the VA said.

The machine's radioactivity comes from two lead "pots" containing some ten slugs of cobalt. Each slug is about the size of a nickel and has been "cooked" in the government's atomic furnaces in Oak Ridge. The slugs give off the same amount of cancer-killing gamma rays as would a three million volt X-ray source, the VA said.

One of the safety features built into the machine is an automatic cutoff that operates even in the event of power failure. Thus the doctor using it never loses control of the apparatus.

The VA plans to decorate the room with ten large murals to make the patients feel a little more at ease in the presence of the large machine. The murals will feature pleasant scenes.

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PUBLIC SAFETY

**Urge Auto Driving
Courses Start in Grades**

► TEACHING STUDENTS how to drive automobiles should be started in the junior high school or the early high school grades, Drs. Virtus W. Suhr and A. R. Lauer of Iowa State College's driving research laboratory urged at the American Association for the Advancement of Science meeting in New York.

Based on the results of a five-year experimental study, they advocated moving classroom training down into the elementary and junior high school grades, even if behind-the-wheel training cannot be given legally so early.

In addition to preliminary study of driving, they suggested early use of simulated driving devices and instruction in larger groups.

"Development of attitudes is much more important than the training of skills," they reported.

Driver training, they urged, could be offered as a part of some scientific course, providing project material for physics and mathematics, for instance.

The effect of training seems to be more highly beneficial to women than men, the study showed.

Training seems, according to results of the survey, to cut women's accidents by about half, but reduces men's accidents at the earlier age by only about 25%. For men, the training effects seem to wear off after the age of 21 to 22.

Only a small percentage of pupils now have the opportunity of getting driver education, and the survey showed that even in Iowa, where more than 6,000,000 youngsters have been enrolled in driver education courses in the last decade, not more than five percent of the drivers on the roads have received such high school training.

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IN SCIEN

ZOOLOGY

**Insects Imitate Others
To Avoid Capture**

► INSECTS advertise, sometimes with bright and gaudy colors, that they are not good to eat, Prof. Frank N. Young, Indiana University zoologist, told the Society for the Study of Evolution at its meeting in New York.

He reported that he tried to find out by experiment how successful insects were in avoiding capture by advertising by brilliant colors and markings that they produce ill-smelling and tasting fluids and gases when attacked by birds, mammals and reptiles.

However the insect switch is that some of them surreptitiously mimic the appearance of distasteful ones even though they are not.

"It is like a dishonest business firm which surreptitiously adopts the trademark of a successful competitor in order to sell an inferior product," Dr. Young said, "except of course the object of the insect advertisers is not to sell a product."

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BIOCHEMISTRY

**Blood Clot Chemical
In Circulating Blood**

► ATOMIC MEDICINE has scored another "first" by proving that heparin, a powerful body chemical that dissolves blood clots, can be found in tiny amounts in normal circulating blood.

The discovery, made possible by using a radioactive "tracer," was announced to the American Association for the Advancement of Science meeting in New York in a report by Drs. Harold B. Eiber and Isidore Danishefsky of the New York Medical College.

This breakthrough now opens the way for more research in abnormal blood clotting, the dangerous situation found in certain types of heart trouble (coronary thrombosis), and radiation sickness from A-bomb explosions.

Heparin is the most powerful known anti-coagulant of blood, and is given to dissolve blood clots in heart disease cases. Exactly how it stops blood clotting has not been found, mainly because of the difficulty in making heparin radioactive.

The scientists succeeded in doing this by injecting an animal with radioactive sulfur, one of the chemicals used by the body to manufacture heparin. The heparin made with the sulfur was then radioactive and the scientists were able to locate it in circulating blood.

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CE FIELDS

PSYCHIATRY

Psychiatrist Asks Silent Patients to Make a Noise

► WHEN PATIENTS remain silent during psychoanalysis, asking them to "guess a noise" may help, Dr. W. Clifford M. Scott, Montreal, Can., told the American Psychoanalytic Association meeting in New York.

Patients may act as if they are defending themselves against making a noise they wish to make. The psychiatrist could remind the patient of the noise by making it himself, he reported.

Both children and adults may use noise instead of speech for many reasons, Dr. Scott said. The "er's", the "uh's", and the "ah's" may show the patient's resentment at being asked to talk.

The noise they make, or hint at being afraid to make, will help them and psychiatrists understand the feelings hidden by the silence, he reported.

A child's baby talk may indicate a wish for the adult to learn the child's language, he said, or it may indicate the child's resentment at being asked to learn the mother's tongue.

Dr. Scott believes that greater use of noise may furnish a useful link between the wish to act or play, found in children, and the wish to speak, found in adults.

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GENETICS

Urge Studying How Heredity Affects Minds

► HEREDITY plays an important part in determining whether a man will be a Phi Beta Kappa or a moron, whether a dog will be a fierce, snarling police dog or a friendly tail-wagger, whether a rat will be bright at learning to go through mazes or dull.

However, scientists need to know a lot more about the pathways between the inherited genes and such differences in behavior. Research in this field is urged by Dr. John L. Fuller, psychologist of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me.

One pathway that should be explored, Dr. Fuller suggests, is the inheritance of variation in structure of the brain and nervous system. Not enough is known, he indicated, about differences in the brain and nervous system between an idiot and the winner of the \$64,000 question.

Some geneticists believe that all gene effects upon complicated processes of behavior will be found, upon close analysis, to depend upon enzymes.

It is known, for example, that one specific

form of mental deficiency is linked with an inherited enzymatic deficiency, a disorder in the metabolism of one of the amino acids, phenylalanine. The abnormal metabolic products seem to produce a toxic state in which the brain does not function properly.

We should search, Dr. Fuller says, for metabolic deficiencies in other forms of mental disorders, particularly when they occur running in particular families.

We should look for what causes differences in strengths of motivation, he indicated. So called "dull" rats, called that because they make lots of mistakes in a maze, are not imbeciles. In other tests they may even surpass the "bright" animals.

"In our psychological comparison of dog breeds at the Jackson Laboratory, we have found no one breed to be consistently superior on all tests," Dr. Fuller declared. Instead there are characteristic patterns of abilities that seem to be dependent upon heredity.

Another path suggested for gene action upon behavior is through the endocrine glands.

Dr. Fuller reports his findings in *Eugenics Quarterly* (Dec., 1956).

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ANTHROPOLOGY

Big Game Hunters Lived In West 1,000 Years Ago

► MORE THAN 500 YEARS before Columbus first saw America, people were living and hunting big game in Upper Hell's Canyon on the Snake River in what is now Oregon and Idaho.

The projectile points with which they felled their game and bones of deer and elk left from their dinners were found by Smithsonian scientists under the direction of Dr. Warren W. Caldwell and George L. Coale, in an attempt to rescue archaeological material before flooding of the area by the Brownlee and Hell's Canyon reservoirs.

Some of the finds were dated at over 1,000 years old.

These ancient Americans obtained their food by hunting wild animals and gathering the wild foods of forest and meadow. Fishing equipment was not found, but an abundance of fresh-water mussel shells in the kitchen middens, or dump heaps, indicate that these people did get some food from the water. Milling stones showed that they must have ground the seeds they gathered.

They apparently lived in rude houses, probably made of brush, on a saucer-shaped depression about 25 feet across and about one foot deep near the center.

When the first Europeans arrived in the area, it was inhabited by a band of Shoshoni Indians known as the "Mountain Sheep Eaters." This group also lived by hunting and gathering wild food. The Shoshonis were last known to visit the area regularly in the 1880's.

Their survivors now live mostly on reservations in Idaho and Oregon.

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CRIMINOLOGY

Manage Criminals' Lives Instead of Confinement

► CONFINEMENT to jail or any other kind of detention is harmful and actually operates against rehabilitation of criminals, Dr. Marcel Frym, director of criminological research, Hacker Foundation for Psychiatric Research, Beverly Hills, Calif., contended at the American Association for the Advancement of Science meeting in New York.

Instead, Dr. Frym suggested there should be complete management by private agencies of individuals who have endangered the community by anti-social acts of some seriousness. This would include necessary adjustment of the home and family situation, proper employment and psychotherapy.

Fears underlie every kind of delinquency, he explained, and they can be reduced by an adequate type of work holding some promise for the future.

"Methods other than punishment through incarceration can have a tremendously deterring effect on the tempted offender and can much more efficiently mobilize inhibitions against the commission of a crime," Dr. Frym said.

"To classify an offender, after clinical study and examination, as seriously disturbed and in need of treatment, and correctional psychotherapy itself, may be much more painful to the law-breaker than the traditional type of punishment.

"This kind of procedure, which compels him to face his hidden, repressed fears and to look at his misdeeds self-critically, is a shocking experience and makes it impossible for him to blame society or others for his antisocial activities."

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MEDICINE

Blood Pressure Reducing Drugs Tested Nationally

► FIVE OF THE NEWER, highly praised drugs for lowering blood pressure and controlling heart disease are now being studied in a nation-wide test by six Veterans Administration hospitals.

The drugs are reserpine, a tranquilizing drug; hydralazine, a powerful dilator of blood vessels; and three other synthetic compounds, pentolinium tartrate, chlorisondamine chloride and mecamylamine hydrochloride. These last three block nerve impulses going to the blood vessels.

Dr. Edward D. Freis of the VA Mount Alto Hospital, Washington, D. C., is coordinator of the two-year test program. He said the program's great value lies in the tremendous resources of the VA hospitals, with their large number of patients and opportunities for follow up studies.

Dr. Freis said present medical opinion differs on how effective the drugs really are. The VA study will settle the matter with scientifically proved facts.

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