prescribing, but the issue is far from settled.

The industry argues that even though brand-name drugs cost more than their generic counterparts, the brand name is a guarantee of quality that justifies the price. And, it insists, generic counterparts may not be counterparts at all; subtle differences in manufacturing processes may affect the way drugs that are chemically identical behave inside the human body (SN: 4/22/67, p. 382).

The Food and Drug Administration, leading clinical pharmacologists and even HEW agree that chemical identity does not always equal clinical equivalency, but, says its Task Force on Prescription Drugs in its second interim report, "the lack of clinical equivalency among chemical equivalents meeting all official standards has been grossly exaggerated as a major hazard to the public health."

Dr. Milton Silverman, head of the task force's professional staff, reports that of a group of 400 drugs commonly prescribed for the elderly, who comprise only 10 percent of the population but 23 percent of the retail drug market, the issue of equivalency is relevant to only a couple of dozen. Roughly 70 percent of the 400 are patented drugs for which there is no generic competitor. The importance of equivalency among the remaining 30 percent, he explains, is limited to those few so-called life-saving drugs, such as potent antibiotics, that come in solid forms—tablets or capsules.

Drugs that are chemically identical are assumed to be clinical equals if the active ingredients reach the blood stream at the same time and in the same amounts. With liquid drugs, this is seldom a problem. But in solids, crystal size, tablet coatings and binding agents affect the rate of dissolution.

To assure high quality in all drugs on the market, HEW endorses ongoing research by the FDA, in association with the National Academy of Sciences and Georgetown University, to measure effectiveness and equivalency of both brand name and generic products. Studies on 1,834 drugs licensed prior to 1962 (when the law began requiring manufacturers to demonstrate effectiveness as well as safety) FDA Commissioner Herbert L. Ley, Jr. says, found 3.5 percent to be totally ineffective, 3 percent were found ineffective in certain combinations and another 6.8 percent are questionable.

"Adequate financial support," the task force states, "should be given to the FDA to tighten control on all drugs in interstate commerce." Neither it nor FDA will spell out "adequate" in dollars.

The department, the report says, should also establish a compendium providing up-to-date information on all drugs (SN: 3/4/67, p. 207). There is at present no such single source for physicians, who therefore rely heavily on promotion and advertising for information.

Because of this, and in spite of firm protests from the American Medical Association, the task force doubts the ability of average practicing physicians to prescribe rationally.

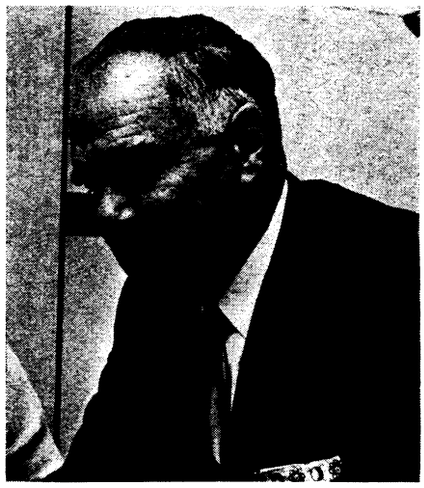
SCIENCE SPOKESMAN

Seaborg wins Arches Award

Dr. Glenn T. Seaborg has been chairman of the U.S. Atomic Energy Commission since 1961.

He won the Nobel Prize in chemistry in 1951 for the discovery of plutonium and his work with other transuranium elements.

He has also been chancellor of the University of California at Berkeley and an associate director of the Lawrence Radiation Laboratory, and is one of science's more prolific proselyters and speechmakers.



Westcott—AEC

Arches of Science: Dr. Seaborg.

It was for these latter activities that Dr. Seaborg will be honored next month when he becomes the fourth winner of the Arches of Science Award —a gold medal and a $25,000 check.

The award, named for the five arches that soar above the Pacific Science Center in Seattle, will be presented in formal ceremonies there on Oct. 16.

In his nuclear research work at the Radiation Laboratory, Dr. Seaborg was the co-discoverer in 1940 of plutonium, element 94, the first of nine transuranium elements—through No. 102—that he and his co-workers synthesized during the next 18 years.

Besides his roles in AEC policy, planing and administration, and in academic research, Dr. Seaborg is deeply involved in interpretation of science activities, such as the development of new methods of teaching and conducting research in chemistry. He also takes an active role in youth programs, including the science fairs and Science Talent Search sponsored by Science Service, of which he is president of the Board of Trustees.

NASA HEAD

Webb out, Paine (maybe) in

Four days before the scheduled first flight of a manned Apollo spacecraft, the head of the National Aeronautics and Space Administration will resign. James E. Webb made public his decision last week only a few days after the announcement that the Administration was cutting another $100 million from what was already the lowest space agency budget in six fiscal years.

Loudly dissatisfied by the austere state of the U.S. program, Webb declared last week that the U.S. is well behind the Russians in space and will be "in a second position for some time to come."

As head of a scientific agency, Webb has been, in a way, a maverick. It is as administrator of a vast Government-industry combine that he has largely filled his role. At college he studied education and law. His career included jobs concerned with industrial management, public administration and urban studies, as well as three years as director of the Federal Bureau of the Budget.

The substantial fortunes of NASA, until recent years, have largely been attributed to Webb's rapport with Capitol Hill—and as the space agency grew, so did the aerospace industry. As NASA became more and more Apollo-oriented, however, leaving other projects behind, Webb's leverage has become less effective. Many Congressmen, perhaps prompted in part by Webb's ability to say less with more words than almost anyone in Washington, have become less responsive to Webb's almost automatic references to Russia's leaving the U.S. behind.

As acting director of NASA to fill Webb's post, President Johnson has appointed Dr. Thomas Paine, who came to the agency as deputy administrator six months ago from General Electric. At GE his work was heavily scientific, including electronic, magnetic and high temperature materials research, along with solid state physics and chemistry.

It was not known last week whether Dr. Paine would be appointed Webb's formal successor for the rest of President Johnson's term. With the Apollo program coming around the bend, however, his scientific background could make him just the administrator NASA needs for the long, lean haul.

HANGOVERS, TOO

Tranquilizer fights alcohol

Physicians commonly warn their patients against combining alcohol with tranquilizers, and with good reason. They generally act together on the same brain system and with similar effects—one heightening the other.

But strangely enough, one popular tranquilizer, Librium (chlordiazepoxide), has exactly opposite action in the brain. It counters the effects of alcohol in every brain structure tested so far, and appears to counteract intoxication as well as hangovers.

This discovery was presented to the International Congress on Alcohol and Alcoholism meeting in Washington last week.

Dr. Leonard Goldberg, chairman of research at Stockholm's Karolinska Institute, tested the combined effects of the drugs only on normal volunteers, and says his evidence cannot be applied to alcoholics. Nor would he recommend to anyone that this tranquilizer be taken to sober up or prevent hangovers, but it does offer a promising avenue of research in the quest for drugs to counter the effects of alcohol.

The Karolinska finding is based on studies of both animals and humans and includes direct investigations of the brain, as well as subjective and behavioral measurements. On all counts, Librium reverses the effects of alcohol.

It reduces body sway and eye jerks resulting from intoxication and counters the depressant effects of alcohol on the central nervous system. In addition, 16 volunteers tested with five ounces of whisky, plus small doses of Librium, subjectively rated themselves less intoxicated than they normally would feel with that amount of liquor. But with meprobamate (Miltown, Equanil), they rated themselves as drunker.

Alcohol first acts on the brain at the gates of sensory awareness by weakening the filter which blocks out extraneous stimulation. Further into the brain, alcohol depresses those centers controlling wakefulness and vigilance, while at the same time it excites the emotional centers and cortex. Thus alcohol works mainly by depressing the brain's inhibitory systems. The drunken individual makes less sense out of his environment because his filters and alertness are depressed. But activity within the brain itself is excited.

At each stage Librium has opposite effects.

Dr. Goldberg believes this evidence may throw some light on neurosis. According to some theories, he says, the neurotic individual has a defective sensory filtering system. One way to treat the condition, says Dr. Goldberg, may be with a drug that strengthens the filtering mechanism.

OLYMPICS

Sex test inconclusive

American athletes at the upcoming Olympic Games in Mexico City will be carefully fed, handsomely housed, dosed against diarrhea and will probably set some records. But they may not know what sex they are.

The question of whether certain female athletes are in fact female will certainly arise during medical examinations at the Olympics, Dr. Keith L. Moore of Winnipeg, Canada, states in a special issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Females have been declared ineligible, he says, for no other apparent reason than the presence of an extra chromosome, presumably in the sex chromosome complex.

"This seems grossly unfair," Dr. Moore says, "if other criteria of sex conform with the person's social sex."

In most individuals, he declares, these nine components of sexual phenotype conform with one another: external genital appearance, internal reproductive organs, structure of the gonads, endocrinologic sex, nuclear sex, chromosomal sex, psychological sex and social sex.

In persons of abnormal sexual development no single index or criterion can signify the appropriate sex. For this reason, buccal smears (samples from the inside of the cheek), reflecting chromatin or nuclear sex, or chromosomal analyses, indicating chromosomal sex, cannot be used as indicators of true sex, Dr. Moore says. (This kind of criterion was used last year to disqualify Polish track star Ewa Klobukowska from the Women's European Athletic Cup competition.)

When should females be declared ineligible? Although it is difficult to generalize about this, Dr. Moore says "certainly chromatin-negative females with a Y chromosome (a gene found in the male sperm), who exhibit advanced virilism, such as male-like external genitals and physique, or unusual growth of hair on the face, or who have levels of plasma testosterone identical to that of males, should be ineligible."