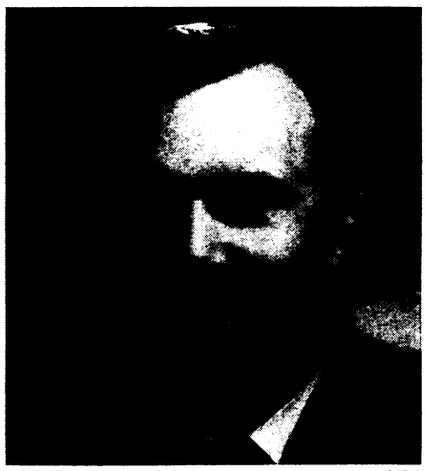

NBS

Branscomb: Heading standards lab.

can on the House Committee on Science and Astronautics, and Sen. Everett Dirksen (R-Ill.). Dirksen says he would approve Dr. McElroy. And Fulton, although not happy about Dr. McElroy's participation in Scientists and Engineers for Johnson and Humphrey in 1964, says he will not be against him. "He's a fine scientist, and he hasn't been involved in any controversial political matter as Long had." Nevertheless Fulton remains irritated that all the names he saw considered for the post were those of Democrats.

Dr. McElroy comes into the job with an impressive scientific record. He is a world authority on bioluminescence, the process some living organisms use to convert chemical energy to visible light. In the course of his studies, he solved the structure of the substance luciferin and determined the nature of the subtle role of the enzyme luciferase.

His work brought him election to the National Academy of Sciences in 1963. Ironically, as a member of the NAS council, he was one of the scientists who met with Nixon on the Long controversy on April 28, when the President publicly admitted his error in refusing to nominate Dr. Long on political grounds.

Associates say Dr. McElroy has great insight into the problems of science and Government, gained in part through membership on the President's Science Advisory Committee from 1962 to 1967, service on several NSF panels, and a term on the Academy's Committee on Science and Public Policy (COSPUP).

Biologists are elated that one of their colleagues was named for the top NSF post. Dr. McElroy's two predecessors were both physicists, and some scientists take this as another sign of the rising prestige of the life scientists and the decline in eminence of the World War II-nurtured physicists. Dr. McElroy, however, feels his scientific field was not a factor in his selection. ◇

THE PANALBA CASE

Antibiotics in court

The Food and Drug Administration's authority to remove from the market a host of combination antibiotics is being challenged in court. The Upjohn Company is moving to block FDA action prior to a full-scale hearing on the safety and effectiveness of Panalba, a combination product that brings in upwards of $16 million a year.

The outcome of the case, now in Michigan courts, will have ramifications on the fate of some 49 other combination antibiotics FDA plans to ban on grounds that they are either unsafe or ineffective or both.

In action based on drug evaluations by a panel of scientists established by the National Academy of Sciences, FDA declared its intention of banning Panalba—a tetracycline-novobiocin combination—prior to a hearing on grounds that the drug is ineffective as a combination and that novobiocin presents a hazard to health (SN: 5/31, p. 523).

In mid-June, a circuit court granted the Kalamazoo, Mich., company a temporary restraining order against FDA which will be in effect until the beginning of July. The court will then rule on Upjohn's petition for an injunction that would prohibit FDA from banning Panalba until a hearing is held on the antibiotic.

Officials of FDA say the present contest between industry and the agency is without precedent. Under law passed in 1962, FDA must grant a hearing before rescinding its approval of a new drug unless a clear threat to health is involved, in which case the Secretary of Health, Education and Welfare can remove a drug from the market by special order.

This regulation, however, does not apply to Panalba, which was approved prior to 1962 and which is subject to special provisions applying to antibiotics, including batch-by-batch certification by FDA. Nor, in some views, does Panalba involve an uncontestable threat to health.

"Novobiocin," says a spokesman for the Pharmaceutical Manufacturer's Association, "is no more dangerous than it ever was." Side effects including rash, liver disorders and blood disorders are known to occur, but were known when the potent drug was first licensed.

The safety argument would, presumably, be resolved in a hearing. At issue now is the authority of FDA to act without giving the drug companies a chance to present their case.

TEKTITES

Moon source proven

Tektites are mysterious glassy pebbles. Their geographical distribution and their chemical composition, which differs from that of earthly minerals, have made many scientists suspect that they come from space. The moon has been suggested as a possible origin.

Now, a scientist with the National Aeronautics and Space Administration, Dr. Dean Chapman, who is chief of the thermal and gas dynamics division of the Ames Research Center at Moffett Field, Calif., presents evidence that, he says, builds an airtight case for the lunar origin of at least one group of tektites.

Dr. Chapman's samples are the so-called Australasian tektites found in Australia and Southeast Asia. These are about 700,000 years old and are the youngest of the tektites. There are two other age groups: 15 million years old and 35 million years old.

Dr. Chapman suggests that the Australasian tektites come from moon's crater Tycho. He believes they were formed when an asteroid hit, splashing droplets of molten rock so high that they escaped the moon's gravity and fell to earth.

Dr. Chapman has been collecting and studying Australasian tektites for nine years, during which time he has collected hundreds of thousands from 200 locations in 10 countries. The chemical composition of the tektites divides them into 10 families. The families are found in long strips of the landscape, "elongated streets," as Dr. Chapman puts it.

Assuming an origin beyond the earth, Dr. Chapman set out to determine a trajectory that might have caused this kind of fall pattern. The argument is easiest to construct in reverse, so he started from the moon.

First he looked for a large young crater that would be about 700,000 years old. Tycho fits these specifications. The next step was to determine whether objects coming from Tycho could have landed on earth in the pattern of the Australasian tektites. For this he used the same computer analysis that is used to determine the splashdown points of returning lunar spacecraft. The result gave the observed pattern of tektite finds.

He also points out that chemical analyses showed minor variations among the members of the 10 families. He

suspects this may be "because the rocks in the crater were not homogenous."

Dr. Chapman is sure that his tektites could not have come from much farther out in space than the moon. If they had spent any appreciable time in space, he says, cosmic rays would have left evidence in them.

"Material traveling in space," he says, "is bombarded by cosmic rays which produce the isotope aluminum 26. The tektites we found don't have this isotope—so we know they didn't travel very far in space."

AEC BUDGET

Accelerator money authorized

Money is one of the most serious problems that physicists face in their projects to build particle accelerators with energies in the range of hundreds of billions of electron volts, and it is the one over which they have the least control.

Last year budgetary problems forced Great Britain to drop out of a European project for a 300-billion-electron-volt (GeV)accelerator (SN: 7/13/68, p. 30), while in the United States the 200-400-GeV National Accelerator Laboratory at Batavia, Ill., was for a while in danger of getting no money at all (SN: 7/27/68, p. 81).

The Atomic Energy Commission had asked Congress for an authorization to spend the whole cost of the project, $250 million, over six years. After much political pulling and hauling, it came out with $14 million for one year.

This year, for fiscal 1970, which began July 1, the AEC is asking for authority to spend the remaining cost of the project, $218 million, over the next five years, and an appropriation of $96 million to be spent this year. And this year the Congressional weather seems fairer.

The Joint Committee on Atomic Energy has recommended giving the AEC authority to spend the whole cost.

In other parts of the AEC budget, the joint committee authorized more or less what the AEC had asked for (SN: 5/26, p. 399).

In one case, the food irradiation program, the AEC got an authorization it hadn't asked for. The AEC budget submitted by the Nixon Administration would have terminated its program of experiments in preserving food by radiation. The method was once touted as an answer to problems of long-term food storage, but it has problems (SN: 3/22, p. 287). Nevertheless, the joint committee insists that the AEC spend $750,000 in fiscal 1970 on a continuation of food-irradiation research.

The authorization bill passed the House on June 24.

PULSARS

No gammas, no lighthouse

SAO

Fazio: No evidence for radiation.

The study of pulsars has led to a theoretical pulsar model that has recorded a number of striking successes in recent months. The model sees a pulsar as a rotating neutron star surrounded by a magnetized plasma of protons and electrons. Invented to explain radio emanations, the model successfully predicted optical and X-ray pulses as well for the pulsar in the Crab nebula, CP-0532 (SN: 5/31, p. 522).

There has also been some hope expressed that pulsars would give astrophysicists a handle on the decades-old mystery of where the cosmic rays come from. The particles in a pulsar's spinning plasma, the cosmic ray proposition holds, would go faster and faster as they moved away from the surface of the neutron star, until they reached speeds near the speed of light. At that point they would break loose from the confinement of the magnetic field and fly off into the surrounding space.

Such high-energy protons and electrons could be or produce the cosmic ray particles, and only a few objects like the Crab would be able to supply the observed flux of cosmic rays.

The trouble is that the predicted cosmic rays don't seem to be coming from the Crab. Astronomers at the Smithsonian Astrophysical Observatory report that they have been looking for almost a year for high-energy cosmic gamma rays from the Crab, and have not seen any.

Gamma rays are sought because they come straight from the source. Charged particles move in curves, and so the direction of their arrival does not tell where they came from.

Pulsed gamma rays from the Crab have been found at energies around 100,000-electron volts, but these are considered direct radiation from the pulsar rather than cosmic rays. The Smithsonian group searched for rays with energies of about 100-billion-electron volts, "an entirely different ballpark," says Dr. Giovanni Fazio. Gamma rays at this energy should be produced when accelerated particles, spewed out by the rotating pulsar, collide with each other and with other matter in the Crab. Gamma rays produced by this process should also come in pulses like the radiations of the pulsar proper, if they were being produced.

The work by the Smithsonian astronomers, monitoring both the Crab and the pulsar CP-1133, was the first use of a new high-energy gamma ray detector at the Smithsonian's Mt. Hopkins station in Arizona. The detector is an array of mirrors mounted so that together they form a large curved reflector about 34 feet across. It looks for light generated by the entry of high-energy gamma rays into the atmosphere. When such a ray strikes the atmosphere, a shower of secondary particles is produced. These move faster than light moves in the atmosphere, so their motion generates an identifiable kind of light called Cerenkov radiation, which the Mt. Hopkins detector records.

Observation of the Crab and of CP-1133 gave "no evidence for radiation," says Dr. Fazio. "If we could find it, it would verify that cosmic rays are being accelerated."

But the failure may not be conclusive. "That we don't see it," says Dr. Fazio, "may mean that we aren't sensitive enough." He plans to go back for another look in the fall, when the Crab comes back to a position convenient for viewing from Mt. Hopkins.

If the high-energy gamma rays remain unseen, however, the rotating plasma, the so-called lighthouse effect that is used to explain the pulsar pulses, may be in trouble. If the pulsars are not throwing off high-energy particles, it could mean that they are not rotating at all. Alternately it could mean that the particles are escaping the neutron star's magnetic field at much lower energies than was supposed, and if this is true, it makes it hard to see how they could produce the observed radio emanations of the pulsars on their way out. If the nonappearance of the high-energy gamma rays is established, astrophysicists will not only have to continue their search for the origin of cosmic rays. They will have to find another theory to explain the pulsars.