

## Science in the News

### Enforcing an Atom Test Ban: Scientists Testify Before Joint Atomic Energy Committee

The scientific testimony before the Joint Congressional Atomic Energy Committee last week left no doubt that enormous technical problems are involved in establishing a reliable system for detecting underground atomic explosions.

This came as no surprise to the committee, which made it clear at the outset that the purpose of the inquiry was not to develop new information, but to bring the available information more forcefully to the public's attention than had been done so far. The committee, the Atomic Energy Commission, the Defense Department, and some scientists have strong reservations about the Administration's efforts to negotiate a test ban with the Russians. It was no secret that the committee's purpose was to win support for their pessimistic view of the situation.

Leading scientists, including some who favor the test ban, were put on record as convinced that the proposed "Geneva system" (a network of 180 seismographic stations spaced around the globe) is, on technical grounds anyway, hopelessly inadequate as a reliable system for enforcing a ban on all tests.

Indeed, there was general agreement that even a greatly expanded network of detection stations would not guarantee that even fairly large tests, involving blasts the strength of the Hiroshima bomb or larger, would be identified and located. It was concern over these difficulties that led to the American proposal of 11 February to limit the ban to explosions above a certain threshold.

The Russians, in turn, on 19 March announced their willingness to accept the American proposal with the condition that the U.S., Great Britain, and

the Soviet Union agree to an unpoliced moratorium on underground explosions below the threshold. During the moratorium both East and West would conduct research to improve methods of detection. Until this reply to the American proposal, the Soviets have been insisting that a treaty must ban all nuclear explosions: in the atmosphere, in outer space, under ground, and under water.

#### Muffling the Explosions

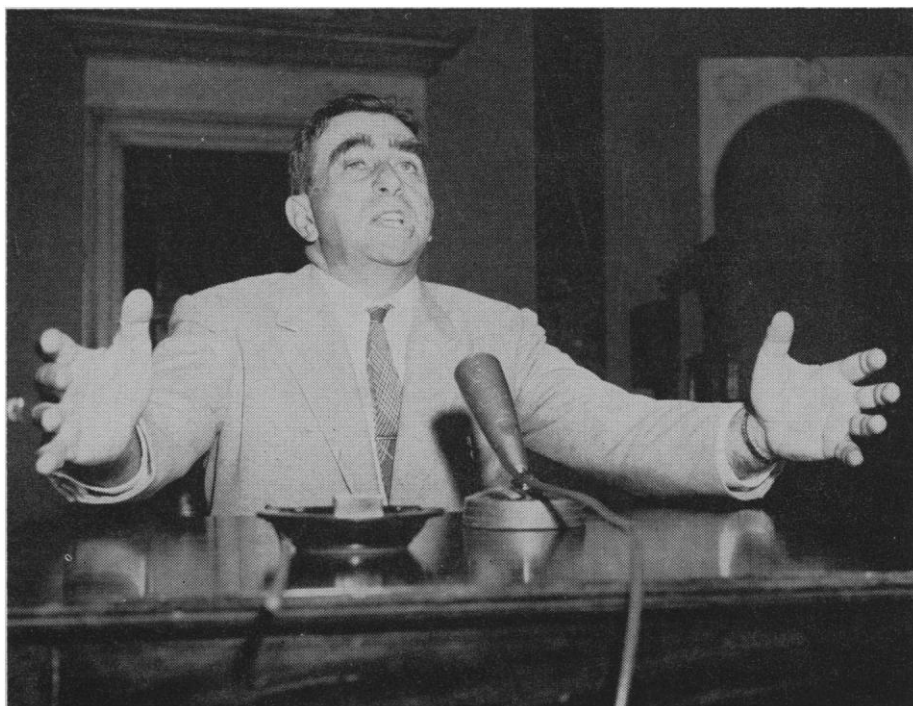
The most discussed of the many technical difficulties were the techniques, brought to the attention of the Russians last year, for "decoupling" (muffling) an explosion. This would make tests far more difficult for seismographs to detect than had been considered likely at the 1958 conference of technical experts

at which the Geneva system was worked out.

The committee heard convincing testimony that the so-called "big hole" theory is not only sound, but practical. Large underground chambers, the scientists said, could muffle explosions by a factor of as much as 300. Thus, a fully muffled 100 kiloton hydrogen explosion (equivalent to 100,000 tons of TNT) would pass completely unnoticed if the 1958 Geneva network were in use.

The committee was told that in this country alone there are several hundred man-made and natural underground chambers that can be used to muffle small tests by factors of from 30 to 300 times.

The entire 1958 Geneva system, it seems, was based on the incorrect assumption that a few tests in Nevada gave a reasonably accurate basis for estimating how well the shock waves from an explosion would register on distant seismographs. But it was pointed out that explosions could be decoupled by a factor of 3 by doing nothing more than setting the blast off in harder rock than that found in the rather resonant Nevada strata. This means that nations would have to go to virtually no trouble or expense at all to muffle a 60 kiloton blast (three times the force of



Edward Teller, "Father of the H-bomb," gestures during his appearance before the Joint Atomic Energy Committee. Teller, the leading scientific opponent of a test ban, told the committee that tests of "tactical" nuclear weapons—and some large ones—could escape detection now and for some years to come. [United Press]

the Hiroshima bomb) to the 20 kiloton level.

### A Missing Factor

The weakness of the hearings was brought into the open with the unexpected appearance of Nobel Prize Winner Harold Urey at the panel discussion the committee held among the scientists on the third morning of the hearings.

Even before Urey spoke, suggestions arose that the network of seismic stations might not be the only source of information on clandestine tests. Seismologist Roland Beers told an allegory about a mining operator who was unable to find a profitable strike despite a tremendous investment in the latest scientific equipment. He found what he was after, nevertheless, because one day a lucky old prospector wandered into his office and offered to show him what he was looking for.

Senator Wallace Bennett (R-Vt.) amplified this by noting that the story reminded him of the bridge motto, "one peek is worth two finesses."

But it was not until Urey got the chance to speak that anyone, in so many words, expressed the opinion that, granting the weaknesses of the proposed network of seismic stations, it would be extremely difficult for the Russians or anyone else to hold atomic tests without some rival power's intelligence system getting wind of them.

So, although the committee succeeded in putting on record a convincing picture of the technical difficulties of detecting underground tests, the question of how great a risk there is of the Russians' actually carrying on testing after a ban remained essentially unanswered.

And the ultimate question of how great a risk the U.S. should be willing to undertake in return for the various advantages of a test ban was not dealt with at all.

## The Drug Hearings:

### Kefauver Continues His Campaign

Senator Kefauver's lengthy exposé of the drug industry, now in its fifth month, continues to roll along.

Since December the senator has looked into the production and marketing of steroid hormones and tranquilizers, with time out to listen to critics, and occasionally defenders, of the indus-

try at large. This week he was concentrating his attention on oral antidiabetics. Next month he plans to set to work on antibiotics.

The hearings have certainly been politically useful to Kefauver, who is up for re-election this year, and it can be assumed that they will be arranged to reach some sort of climax in June or July, whenever the senator feels the publicity will help him most in his 4 August primary, tantamount to election in Tennessee.

But, conceding this political usefulness, it is still difficult to dismiss the investigation as nothing more than an elaborate publicity stunt. Kefauver has won the support of the people who would normally have little in common with his politics, including, for example, such an eminent and widely respected exponent of free enterprise as Sen. Frank Lausche of Ohio. And, as a result of the hearings, the industry has drawn the critical attention of several of the leading magazines, beginning with a piece in *Life* ["Big pill to swallow" (15 Feb. 1960)].

A measure of the industry's uneasiness was indicated when *F-D-C Reports* ("The Pink Sheet"), a confidential Washington newsletter serving the drug and cosmetics industries, took the unusual step of offering its subscribers a daily report on what Kefauver is doing. A good part of the weekly *newsletter's* space, recently, has been devoted to what it calls the "fallout" from the Kefauver hearings, most notably the empaneling of a grand jury in New York to look for antitrust violations within the industry. The grand jury investigation, according to the *New York Times*, "stems from testimony given in recent hearings before the Senate Subcommittee on Antitrust and Monopoly" (that is, from the Kefauver Committee).

### A One Man Show

The show is entirely Kefauver's. The senator, his hair now speckled with gray, is generally the only one of the eight committee members present at the hearings. He sits, virtually alone at the long committee table, a white knight supported by the committee's husky chief counsel, Paul Dixon, sitting at his right. Dixon asks most of the questions, with Kefauver stepping in occasionally, almost always to the discomfort of the witness if he is from the industry. (Representatives of the industry at large, or of individual companies, are

clearly regarded as enemy, from whom the truth must be torn.)

### Profits and Promotion

Except for possible antitrust violations, and even the most reputable companies occasionally run afoul of these laws, no one has suggested any serious wrong-doing on the part of the drug companies. The basic issue, rarely stated clearly by either side, seems to be whether the industry should be allowed to run itself as a normal business, or whether its special position justifies the federal government's taking steps to see that it is run as a public service.

The leading companies stand accused by the committee of making excessive profits (fourth highest among American industries, more than double the 11 percent average of all industries); of spending most of their heavy investment in research on studies that are of commercial rather than scientific value (that is, of putting most of their effort into developing profitable variations of available drugs as opposed to developing really new medicines); and of brainwashing the physicians by spending enormous amounts of money on promotion.

To take full advantage of their promotional effort and of their carefully cultivated, and normally thoroughly deserved, reputation for excellent quality control, the companies use a peculiar system of branding which successfully encourages doctors to write their prescriptions using individual company's trade name for a drug rather than the generic name. Few nonmedical readers would recognize a drug called meproamate. But almost everyone has heard of Miltown and Equinil, which are the trade names under which Carter, the patent holder, and Wyeth, a licensee, sell meproamate.

The public ends by paying, according to testimony before the committee, often three times or more money for a prescription specifying the trade name of a product than it would pay for the same prescription specifying only the generic name. In the case of patentable medicines, the price would be the same for the medicine under either the generic or trade name, since even if the patent holder licenses other companies to make the medicine there usually seems to be a tacit agreement to charge the same (high) price.

Presumably some lessening in the physicians' tendency to prescribe by