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## Compton Lab '704' Will Compute Orbit Of Satellite Sometime Today

### US Satellite To Give 48 Pieces Of Info

Speaking to a full house in Kresge last evening, Dr. N. Whitney Mathews, in charge of the telemetering devices on the US satellite project vanguard, commented on the Russian moon and described the operation of the US project.

He replaced Dr. John T. Hagan, chief of project Vanguard, who was scheduled to speak until the news of the Russian satellite came in. Since then he has been working day and night gathering information on that missile.

Mathews, in a press conference before the speech, stated that so far it is not known whether the projectile is relaying information with its radio signals. The signals are now being put on an oscilloscope and being photographed, in order to determine the presence of high frequency information signals.

The satellite is transmitting with a power of one watt on the 20 and 40 megacycle bands. Mathews said the signal could be picked up on a slightly converted FM receiver.

"Even if it were sending information," he said, "it would be coded, and we wouldn't have a ghost of a chance trying to decode it."

When asked about the unexpected large weight of the foreign moon, he stated that we do not know whether the third, and final, rocket was detached from it when it reached the orbit. This addition, of course, would add much weight.

In answer to the question, "How far ahead are the Russians?" he stated, "They have a satellite—we don't." He explained, however, that we have



N. Whitney Mathews, representing Project Vanguard, speaking in Kresge last night.

at least one such device which could be launched, but that at the present time it was going through very extensive testing.

At the time of the speech, the MIT IBM 704 was grinding away in orbit calculations. The MIT calculations will help ascertain such facts as its orbit, and whether it is slowing down.

Mathews said that the first US satellite, to be launched from Florida, will be much more complex than the Soviet device. It will contain a 48 channel telemetering circuit which will send data concerning weather, collisions with particles, and radiation from the sun. Later satellites will measure cosmic radiation, and transmit surface erosion data. He stressed, however, that just having a satellite can give much information concerning the outer atmosphere from path characteristics alone.

## Scientists Ready With '704' When Russia Shot Satellite

As the news that Russia had launched an artificial satellite of Earth broke over North America the night of October 5, a group of MIT and Harvard scientists were ready with MIT's IBM 704 computer to track the satellite if possible. They were disappointed, however, for this reason: the orbit of the "moon" is so planned that it will be invisible whenever it is over the United States, and in fact most of the Western Hemisphere.

**Visible Only At Twilight**  
The satellite, less than two feet in diameter, is for the next two weeks, visible only at twilight, as it then reflects the sun's light against the darkening backdrop of the sky. The satellite will not be over North America at twilight.

**Moonwatch Network Useless**  
Operation Moonwatch—a division of the Geophysical Year, with 150 visual, radar, and radio tracking stations—is, therefore, out of the picture as far as tracking the Russian satellite is concerned. MIT's Computation Center is ready to handle any information it can get on the satellite—possibly radio or radar might be the answer here—but so far there have not been enough reliable reports to make a run on the IBM 704 worthwhile. (An unverified visual report from Alaska was received in Cambridge as *The Tech* went to press the night of October 6.)

**U. S. Satellite Will Still Be Fired**  
But, as MIT's Professor Dean Ar-

den points out, "All this is no reason that the United States cannot go on with its plan for launching a satellite." The satellite the United States will fire will orbit at a different course and altitude—an orbit such that the one hundred-fifty Moonwatch stations will be able to observe it. The procedure then followed for tracking the satellite would be based on the principle of "feedback".

**Moonwatch Operating Procedure**  
The Moonwatch stations would send all reports, photographic or visual sightings, to the Harvard Observatory in Cambridge. From the Observatory the information would be funneled to the Computation Center in the Karl Taylor Compton Laboratories here at the Institute. With the number of these reports which would be available from the Moonwatch network, the 704 could "observe" the satellite's course and predict the moon's orbit for the next eighteen to twenty-four hours—after which time another calculation would be run off to determine the course for the next period.

**Important Stride In Science**  
In this way small but not entirely negligible changes in the "moon's" orbit will be recorded and taken into account, and a fairly accurate picture of the present and predicted orbit of the Earth's new satellite will be obtained. Such a record would constitute one of the most important strides man has yet made in the conquest of space.

### False Sighting Data Curtails First Effort

by Stephen M. Samuels

The first accurate calculation of the orbit of the Russian satellite will be made on the Institute's IBM 704 Computer, but, as of today, announcement of the orbit is still forthcoming.

The first attempt to calculate the orbit failed last night because the data used was inaccurate. The data came from three separate sightings of the satellite—two at Fairbanks, Alaska, and one at Canberra, Australia—and consisted of the position of the satellite and the time of sighting.

The team of scientists who ran the program last night, led by Dr. Gianpiero Rossoni of IBM and Dr. Donald A. Lautman of the Observatory, had hoped to plot the complete path of the satellite, including its maximum and minimum height above earth. From the minimum height they would have been able to make a rough estimate of its life span.

#### Sighting the Error

However, when the data was fed into the "704", the computer failed to give proper answers. This, according to Dr. Lautman, indicates that at least one of the sightings was not accurately made or, in fact, was not even a true sighting at all. He believes that an airplane or some other object may have been mistaken for the satellite.

Now scientists must wait for another sighting, process the data from it and feed it into the "704" again. Dr. Fred L. Whipple, director of the Observatory has alerted the IGY World-Warning Center and more data is expected today.

The correlation between height of the satellite and its life-span, according to Dr. Lautman, is this: If the minimum height is 150 miles, the satellite will burn up in the atmosphere in less than two weeks. However, if the minimum height is 200 miles, the satellite might last as long as two months.

This is just a guess, he said, and actual determination of the satellite's life-span is one of the prime objectives of the launching. Such a determination would greatly supplement our presently skimpy knowledge of the density of the upper layers of the atmosphere.

#### MIT Orbit Will Be First

Dr. Whipple said yesterday that "We doubt that the Russians know the maximum and minimum distance of the satellite from the earth." Thus, the MIT announcement of the orbit, expected sometime today, will be the first in the world.

The satellite is only visible during the period of sunrise and sunset. According to Dr. Whipple, it will be about two weeks before it passes near Cambridge during those hours. The satellite did pass within 150 miles of here at 8:03 this morning and listeners who had their radios tuned to either twenty or forty megacycles were able to pick up a signal from it.

Newspapermen, at the Computer Center, representing nearly every big paper in the country, were inclined to blame the "704" for its failure to produce an orbit. But Dr. Lautman told them that the computer had done the best it could and that the fault lay with the human machine.

## Mass Exodus From Dorms Is Feared By Administration

by Stephen M. Samuels

The Institute is directly committed to making the dormitory system as attractive as possible to the student body, according to Chancellor Stratton. However, he believes that at present, "the climate (in the dorms) does not appeal to the best elements of the student body."

Dr. Stratton is disturbed by the possibility of a "mass exodus" of upperclassmen from dormitories to apartments, a move which he does not concede has already begun, but which, he forecasts, would "raise the serious question of campus morale. Such a move, he says, could only lead to a deterioration of inter-group relations throughout the Institute."

#### Non-European Viewpoint

MIT—and, in fact, no American college—can afford to adopt wholly the European viewpoint that student housing is the business of the student, not of the college, Dr. Stratton feels. The character of American education, and of the American city, is such that, even within the confines of his home-away-from-home, the student is not separated from the educational system. Thus the success of the system depends, in part, on the "success" of the student housing environment.

Accordingly, Dr. Stratton points out, the Institute has, for the past forty years, been "moving toward a residential system", aimed at the day when virtually the entire student body will live on the campus.

#### Student "Free Will"

Such a system, he is quick to add, will never be forced on the student body. "Students should always have the right to choose between on-campus and off-campus accommodations," he says. In the past, there has always been a sizeable number of upperclassmen who took apartments simply out of curiosity, and this, Dr. Stratton notes, will continue to be so.

But he frankly believes that much moving out of the dorms can be traced to a lack of congeniality and condusiveness to study within them, and to a sometimes low intellectual and moral level. And these factors, he adds, can often be traced to physical factors like the unwieldy size of the dormitory buildings.

Referring to the Institute's acquisition of such large buildings as Burton and Baker, he says, "I only wish we had been able to do it another way."

## MIT Prepares For Flu Epidemic; Vaccine Supply Reported Limited

Asian Flu is presumably beginning to spread fairly rapidly on the MIT campus. The Infirmary is already loaded to capacity, which seems to be the situation through the Boston schools. According to Bob Jordan, IFC President, it is expected that there will be a large number of cases in the next ten days to two weeks. The medical exams have been moved into the Field house to provide additional space for treatment at the Homberg Infirmary.

#### Is It Really Asiatic Flu?

One question which arises is the problem of whether this is actually the Asian Flu or another type virus which has hit this area. All the symptoms seem to point to it except one, that being that most cases in this area are lasting only two days where the actual flu is supposed to last four. All of the schools in this area have sent samples to the state, but as yet none has been thoroughly analyzed, and there is still the possibility of the series of illnesses being due to an entirely different virus.

#### Plans Made For An Epidemic

The Medical Department has set up the following plan to cope with the epidemic, if it reaches these pro-

## Waiting List Of 50 In Dorms Despite Upperclass Exodus

Nearly five hundred upperclassmen deserted the dorms again this year, and swarmed into rooming houses and apartments throughout the Boston area. (One former Baker resident is now collecting seashells at Revere Beach). Other statistics released by the Housing Office showed significant changes in the composition of the student body this year.

#### More Pledges

While the number of first-year students admitted for this fall term was the lowest in years, only 913, the number of fraternity pledges, 312, rose. Last year with a new class of 942 students, there were only 291 pledges and about 400 men living in apartments. These figures do not include those commuting from home.

#### Surge Only A Week

Since it usually takes several weeks for housing plans to get completely organized, Frederick G. Fassett, Dean of Residences, was surprised that the "surge tank" lasted only a week this year. He felt that this was due to the fact that pledging and transferring from the dorms was much faster than in previous years. While all freshmen, with the exception of 18 Greater Boston men, were given the facilities they desired, there are still fifty upperclassmen on the waiting list; none of these, it was emphasized, had been forced to move out of the dorms.

#### Valuable Men Lost

The move to apartments is causing much concern in some circles, for, not only is the idea of a "residential campus" dissolving slowly, but some of the men who could do much for the dorms are moving out.

portions in this area. As far as possible men stricken should stay in their rooms or fraternities. The Medical Department should be notified so that doctors and nurses may make visits. In case an entire house or portion of a dorm becomes ill, the entire group will be moved to Walker. At this point, the Medical Department does not feel it necessary to cancel social or athletic events.

The flu is not to be greatly feared, and there is absolutely no need for panic, it is, however, not something to be taken too lightly as complications may arise. The illness itself is characterized by malays of headaches, nasal congestion, complete muscular ache and just plain misery.

#### Vaccine Is Still Scarce

The possibility of getting shots is slim; only regular city hospitals, key industries, and city officials, etc. are receiving vaccine. Other than the Harvard football team, students are finding it exceedingly difficult to receive this precious serum. Conditions favorable to the spread of the disease are cold, damp days, which was illustrated in New York City when the rate went up tremendously with a change in weather.