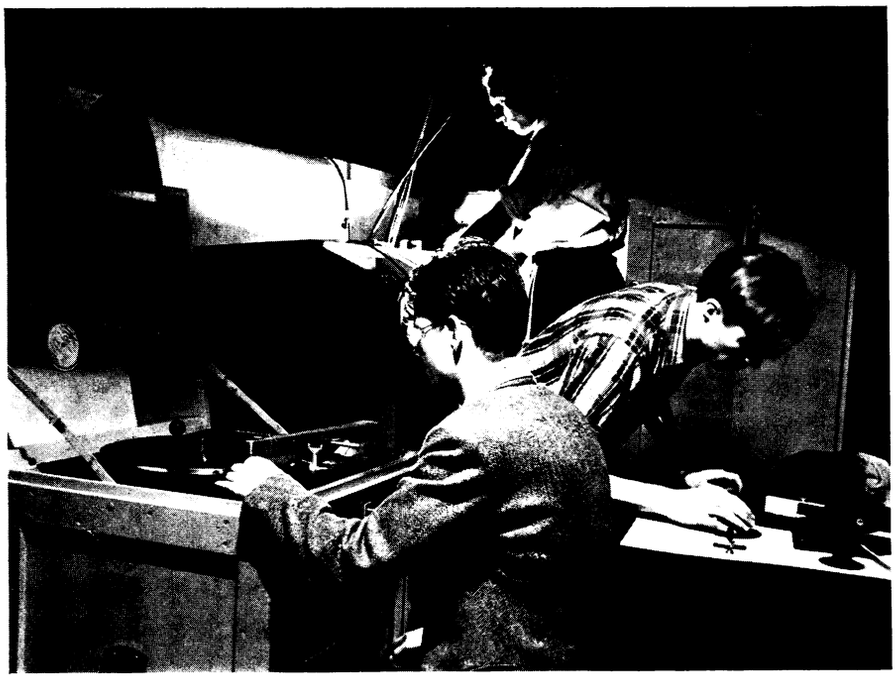

AT THE CONTROLS

Busy at the controls for the Stevens Institute of Technology's Second Sound Show are Julian Webster and Gunthers Zoehfeld, in front. In the rear is Otto Niederer, head of the Sound Department.

church scene from Gounod's "Faust," where Mephistopheles calls Margarita, reverberation, with its relative, the echo, was introduced, especially in the case of the Mephistophelian voice.

Many individuals and groups have assisted, indeed, more than half of the cast of the second "Sound Show" was professional talent. Dr. Herbert Graf, stage director of the Metropolitan Opera Co., directed the Faust scene. Margaret Webster, director of many Shakespearean plays, particularly for Maurice Evans, has been working with him. The Rockefeller Foundation and the Research Corporation have both given grants to aid in the work.

When will these methods come into general use? one might ask. That, of course, cannot be foretold. There are other workers in closely related fields, for instance, the RCA engineers who made possible Walt Disney's latest production, "Fantasia." This has still been shown in only a few cities, because of the elaborate equipment required. But it makes use of auditory perspective, controlling the apparent direction of the sound. The Bell Telephone Laboratories some years ago worked with Leopold Stokowski and the Philadelphia Orchestra, using Stereophonic Sound. By recordings, the empty stage seems peopled with a full orchestra, and each instrument, or group of instruments, is heard from the right place.

Latest demonstration of the Bell work was given a few weeks ago at the Rochester meeting of the Acoustical Society. This included a stereophonic recording of the Stevens "Emperor Jones."

Already the Metropolitan Opera authorities have shown an interest in Mr. Burris-Meyer's achievements, and a few months ago he demonstrated some at a special rehearsal. So perhaps it may not be long before they are generally applied, both in opera house and theater.

And perhaps then, as Mr. Burris-Meyer suggests, "we will see the production of the 'Tempest' Shakespeare envisioned, and a 'Gotterdammerung' which would have satisfied Wagner!"

Science News Letter, May 17, 1941

ASTRONOMY—RADIO

Radio Waves May Show Shooting Stars in Daytime

WHEN a meteor, or shooting star, passes through the atmosphere many miles above the ground, it leaves behind it a radio mirror, a line of broken atoms, which may last for many minutes. By sending radio waves up, and measuring the time of the echo produced by their return, these meteor mirrors may be detected, Dr. J. A. Pierce, of the Cruft Laboratory of Harvard University, reports. (*Physical Review.*) In this way, he suggests, it may be possible to count meteors even in the daytime or in cloudy weather.

Dr. Pierce recently returned from South Africa, where he made observations of the radio effects of the total eclipse of the sun last autumn. While making control observations, with which to compare those of the eclipse day, the Leonid meteor shower occurred, on Nov. 14.

His studies were concerned with the ionosphere, the multi-storied layer of broken or ionized atoms that reflects radio waves to earth, and makes possible long distance wireless communication by carrying the signals around the earth's curvature. A moving film recorded the exact time that a special signal left the transmitter, and when it returned.

Early in the morning hours of the 14th, several bright meteors were seen. In several cases, after 16 or more seconds, a new reflecting area appeared, and lasted for a minute in one case, and 7 minutes in another. With the coming of dawn, about four o'clock, the sky was too bright to see any more meteors. However, 14 more traces, similar to those following the earlier ones, were recorded. Records made on other nights than those of the shower showed only a couple of very faint meteor traces.

Astronomers are greatly interested in checking the numbers of meteors entering the earth's atmosphere, but cloudy weather, and daylight, prevent the records from being complete. Possibly the radio method may be a solution to their problem for, states Dr. Pierce, "this method may be made sufficiently sensitive to compare with photographic registration of meteors, and that meteor counts can be made automatically without regard to time of day or weather conditions."

Science News Letter, May 17, 1941

A world-wide bibliography of 7,500 scientific articles written about *fossil vertebrates* between 1928 and 1933 has been published by the Geological Society of America.