

W. DuVall, Secretary-Treasurer, 4829 Cartwright Ave., N. Hollywood.

The Atlantic Coast Section met on June 4 at the Carl Fischer Concert Hall, New York. The speakers, William Briggs and Wallace Elton, both of the J. Walter Thompson Co., addressed an audience of 50 persons on advertising subjects. Mr. Briggs spoke on "Advertising and Selling, the People's Business," and Mr. Elton spoke on "How to Build a Working Advertisement." Both speakers discussed the techniques and procedures of present-day advertising with the aim of acquainting film producers with the special problems of advertising agencies.—Victor M. Salter, Secretary-Treasurer, % E. I. du Pont de Nemours & Co., Inc., 248 W. 18 St., New York.

### High-Speed Photography Congress

A pamphlet containing the program of the 3d International Congress, on High-Speed Photography is available in limited number at SMPTE headquarters, obtainable upon request to The Editor of the *Journal*. Or you can write to The Congress Secretariat, Department of Scientific and Industrial Research, Charles House, 5-11 Reagent St., London S.W.1.

This publication supplements the information contained in a pamphlet issued in February 1956. In addition to a program and time table, the brochure contains registration blanks to be filled out

and returned to the Secretariat, complete information and instructions on transportation and accommodations, and a description of the various excursions which have been planned. A few changes in the time table may be made before final arrangements are completed. Transportation and accommodations are being handled by Thos. Cook & Son Ltd.

Announcements appeared earlier in the *Journal* in March (p. 174), April (p. 229), and May (p. 290).

## New Concept of Universe — Problem for Physicists

By Earl Ubell

[For this nice exposé of man's ignorance of what can really be the matter of the universe we are indebted to the *New York Herald-Tribune* (for April 10, 1956) and its Science Editor, Earl Ubell, who is reporting from a meeting at Rochester, N.Y. The gravity in the situation is already acutely in the minds of our photographic instrumentationists. Our electronics engineers have long been seeking to cope more successfully with cosmic rays. Some recent earthly radiations are the constant preoccupation of those working with film emulsions. Perhaps way over the horizon in outer space lies the answer to the problem of storing in the air (no film; no tape) color television programs for delayed broadcast. Our own limited study to date indicates only that there may be a hostile atmosphere on Mars or Jupiter or

some given nebula, that they might sabotage our programs with a wicked curve in the comeback.—Ed.]

Physicists, the men who study the nature of matter and energy, are entering a bold new era of discovery bent on finding order in the confusion before them.

At their sixth annual discussions at the University of Rochester many leaders in nuclear science gave the distinct impression that out of their puzzlement may come a new conception of the universe.

The physicists—200 of them, including three Russians—discussed the results yielded in the last few years from cosmic ray research and from their atom smashers. Cosmic rays are atomic showers from outer space.

Crashing atom upon atom, physicists are tickling the innermost nub of the atom, the nucleus, trying to identify the fundamental stuff of matter, trying to figure out what holds it together, and trying to see how its pieces fit together.

To get some idea of why confusion reigns, one must go back in the history of atomic research to about forty years ago when the atom was thought to be an extremely small mass of positive electricity in which little bits of negative electricity—electrons—were imbedded like raisins in a bun. The whole thing was believed to be only .000000000001 cm. wide.

Several years later it was proved that the atom really was composed of a dense central nucleus one thousand times smaller than the size of the atom with positive electricity. Negative electrons supposedly enveloped the nucleus like a fog.

In the next years, the nature of the fog was well elaborated: how it governed the chemical behavior of various elements; how the electrons were arranged in levels about the nucleus; how it was possible to predict the behavior of light striking the electronic fog.

But the nucleus itself remained a mystery until 1932 when Sir James Chadwick discovered the neutron, a lump of matter as heavy as the smallest atom of all, the hydrogen atom, but without electric charge. With this discovery the mystery deepened. Until then, it was believed that the nucleus was composed of hydrogen atoms sprinkled with electrons.

Physicists soon found that it was impossible for electrons to exist in the nucleus and that the core was really made up of neutrons and protons—another name for the core of the hydrogen atom. Now the puzzle was: "What held the core together?"

Protons were charged with positive electricity. By the old rule that similar charges repel each other, the protons should push away from each other causing the disintegration of any nucleus in which they were found. The neutrons couldn't help because they were without charge. Gravity was infinitely weaker than electric force and could not supply the necessary counterbalancing attraction.

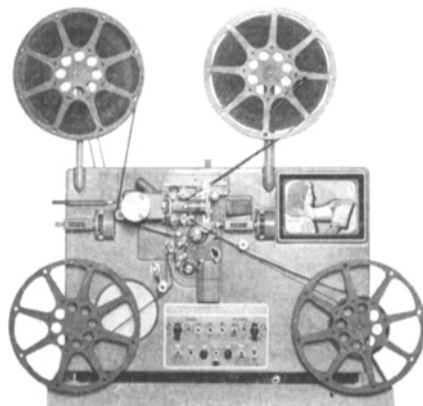
In 1935, Dr. Hideki Yukawa suggested a way out. Suppose, he said there was another atomic particle about one-sixth the size of the proton or the neutron, which are about equal in size. Suppose this intermediate sub-atom, which was called the meson, was flung back and forth between proton and neutron in the nucleus. This

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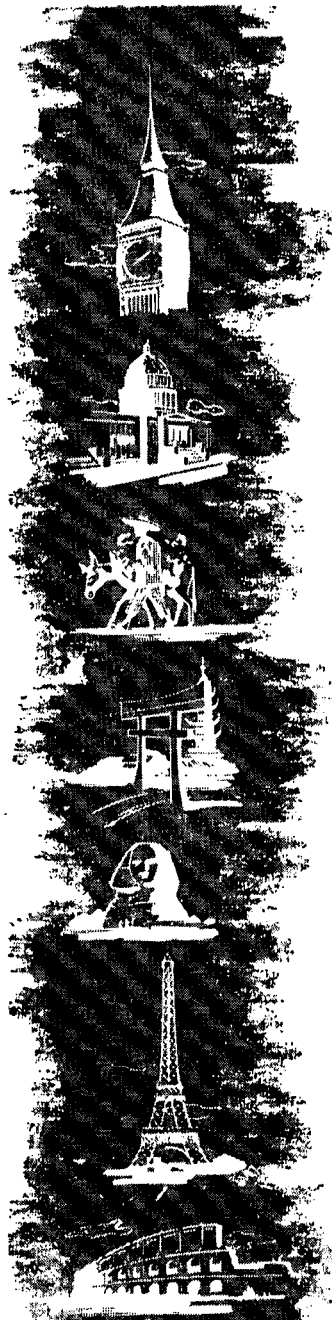
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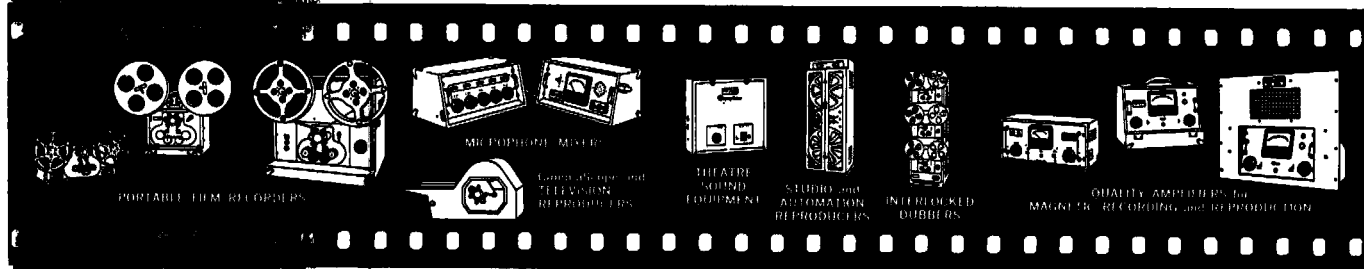
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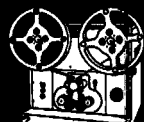
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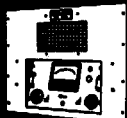
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CANADA—Alex L. Clark, Ltd., 3745 Bloor St., Toronto 18, Ontario. BELMONT 1-3303.

should generate an attractive force between the two, he added. In 1937 the meson was discovered.

Within a few years many new measurements had been made on the meson provoking a strange new puzzle. The measurements did not fit any of the known theoretical mathematical models of matter.

On top of this problem the cosmic ray and atomic accelerator scientists began to discover more particles of different weights and electric charge. Now more than a score are known. Nobody has proposed an adequate theoretical scheme to account for them, predict new ones or discover how they might behave inside the nucleus. In the last year no new particles have been found; which led Dr. J. Robert Oppen-

heimer to remark at the conference, that scientists could be in possession of the ultimate atomic particle — but he was not sure.

In addition to the profusion of particles, it is now discovered that some of these particles have the weird property of seeming to be completely alike in every respect but behaving differently in the way they disintegrate and in the way they interact with other particles. For this the physicist is now forced to find new mathematical explanations.

There is a strong feeling among many of the theoretical physicists that some of their cherished principles like the conservation of energy or the constancy of the velocity of light may have to be sacrificed to make a new scheme for the new particles.

## The Television Society

The Television Society was founded in 1927 in Great Britain when a young Scotsman, J. L. Baird, appeared before the British Association for the Advancement of Science and demonstrated his invention of "seeing by wireless." A rather touching comment on pioneers in general and Baird in particular is given in a booklet about the Television Society. After describing the gradual development of television, it notes: "The year 1934 saw the start of high-definition television and the doom of mechanical scanning systems. J. L. Baird, who had his main interest in optical and mechanical studies, did not take kindly to the inevitable changes and retired to his private laboratory to experiment with colour and stereoscopic television."

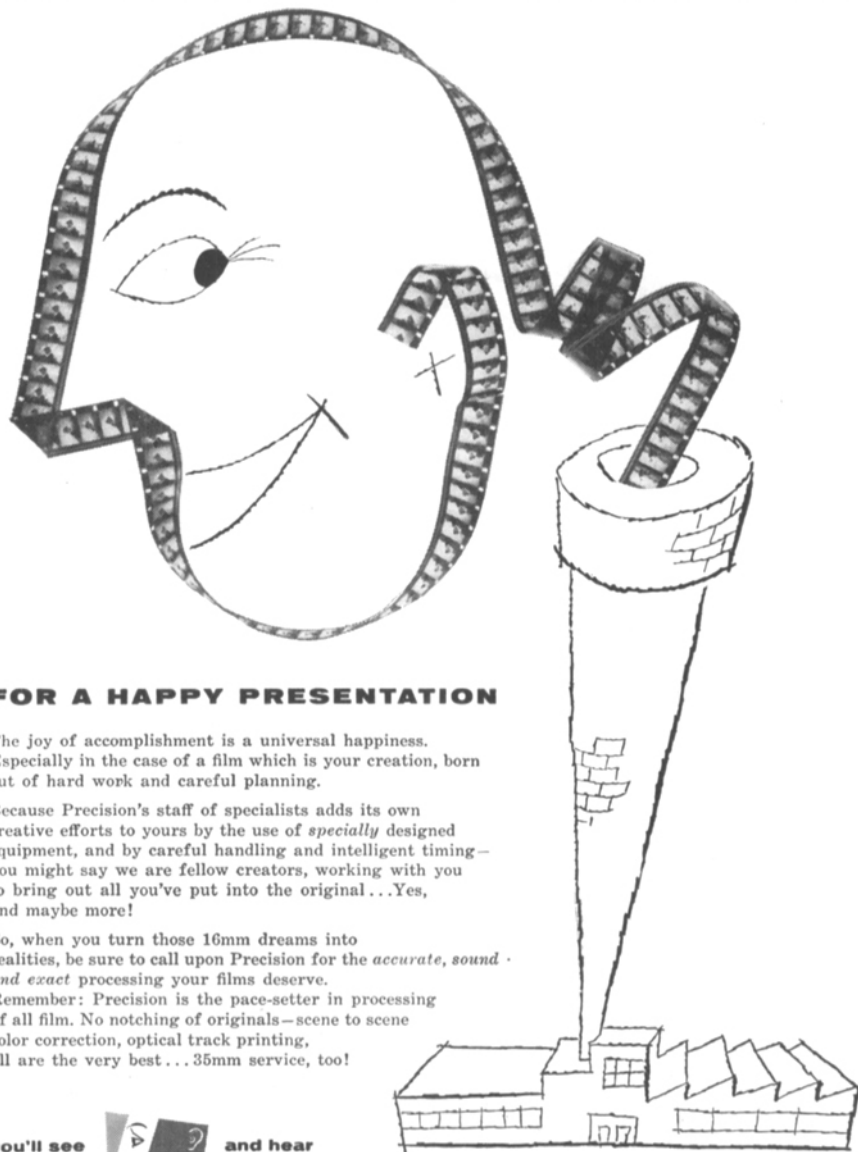
Baird's first public appearance to show his invention had been before the Royal Institution in January 1926. A year later, after he had developed a new method of scanning an image by means of infrared radiation, he was invited to appear before the British Association. With his assistant, J. J. Denton, he gave daily demonstrations of what he termed "Noctovision" and television. Interest in the new invention was immediate, and approximately 50 enthusiasts formed the nucleus of what was to become the Television Society that now claims over 1000 members.

By 1928 the first regular transmissions were being sent out from the Baird Company's station "2TV" at Long Acre. They were of a 30-line picture repeated 12½ times per second, with vertical scanning. This standard persisted until the closing of the BBC studio in Portland Place from which the signals were transmitted to Brookman's Park. In 1930, BBC took over the transmission of television and a program was broadcast for half an hour each night, vision on 261 meters and sound on 365 meters.

The cathode-ray tube, as a means of reproducing television pictures, had been the subject of experiment by von Ardenne, Baird and others as early as 1929, and in 1931 the first symposium on cathode-ray television was held by the Society at University College. By 1934 the trend of the Television Society had begun to alter. From a group of enthusiastic amateurs, the Society gradually came to attract persons who were making a career of television. It is now a specialist society, appealing primarily to professionals, although it accepts applications from all interested in television. Its interests are limited to the furthering of television, as distinct from the entire field of radio communication.

The Television Society is a nonprofit organization which performs the expected functions of holding meetings, dispensing information in its *Journal* and by a monthly news bulletin to its members. Its quarterly *Journal* has many worthy articles such as these recent ones: "An Industrial Television Channel," "An Unconventional Wired Television Distribution System," "Operating Experiences with the BBC Television Studios at Lime Grove" and "Experimental Colour Television."

The Society's *Journal* is now in its eighth volume, seven volumes of three years each having already been published and being



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