of information by now makes a weighty package. From general essays on the progress of the industry down to the most detailed statistics and actual information there is practically nothing to do with the organization of the motion-picture business that cannot be found somewhere in this volume. Names, addresses, film titles, industry statistics of all kinds are all here. Especially noteworthy is the increasing amount of information about the television networks, including detailed personnel listings of television stations.

A few copies of the Year Book are available at $10, but it is available free of charge to subscribers to The Film Daily. Subscriptions, which cost $15 per year within the U.S. and $20 per year abroad, entitle the subscriber to 5 copies of the Film Daily, issued five days a week, in addition to the Year Book.—*D.C*

Of Publishing Scientific Papers

By George E. Burch. Published (1954) by Grune & Stratton, 381 Fourth Ave., New York 16. 40 pp. 8 × 10 in. Paper covered. Price $2.75.

The author who is Henderson Professor of Medicine at Tulane University School of Medicine has in 30 paragraphs done a neat clinical job. Originally an address, it is now published in attractive form with cartoon illustrations which by their simplicity and bluntness may belie the incisiveness of the text. Beginning with the "investigator author" who is further faceted as sometimes a self-plagiarist, self-aggrandizer, etc., the book finishes with the "lay press," the cartoon displaying the printer arriving with a fresh report titled "Kidneys Make Urine," to the obvious satisfaction of the "sensationalist" author. Although very rewarding, this essay seems over-priced.—*V.A.*

The Proceedings of the Symposium on Modern Network Synthesis conducted by the Polytechnic Institute of Brooklyn April 13–15, 1955, will be published in book form in October 1955 as Volume V of this series of Proceedings. Areas covered include network design methods, time domain synthesis and active networks. Price of the book will be $5.00 and orders should be addressed to: Polytechnic Institute of Brooklyn, Microwave Research Inst., 55 Johnson St., Brooklyn 1, N.Y.

A List of American Standards — 1955 edition — has just been published by the American Standards Assn., 70 E. 45 St., New York 17. The publication has an index to about 1500 American Standards. There are 210 for construction and civil engineering; 153 mechanical standards; 272 electrical; 62 metallurgy; 69 chemical; 165 textiles and wearing apparel; 158 safety; 251 photography and motion pictures; 74 petroleum products; 10 office equipment and supplies; 32 letter symbols, drawings and abbreviations; 38 gas-burning appliances; 18 mining; 11 rubber; and a miscellany of other. A separate *section on consumer* contains an index of standards for household appliances, wearing apparel, hobby cameras, etc.

Developments in Large-Screen Closed-Circuit Television

[A report presented on April 20, 1955, at the Society's Convention at Chicago]

CLOSED-CIRCUIT TELEVISION, now averaging one telecast per week, is growing into a major communications medium. Bringing special information, entertainment and sports to selected audiences, closed-circuit TV is contributing a positive television service wholly different from broadcasting. Sometimes known as the private life of television, closed-circuit TV is a powerful force in reaching selected audiences with drama and impact.

Little known a few years ago, it is estimated that more than four million persons have viewed closed-circuit TV in the last few years, and that the public has spent more than five million dollars to see theater television.

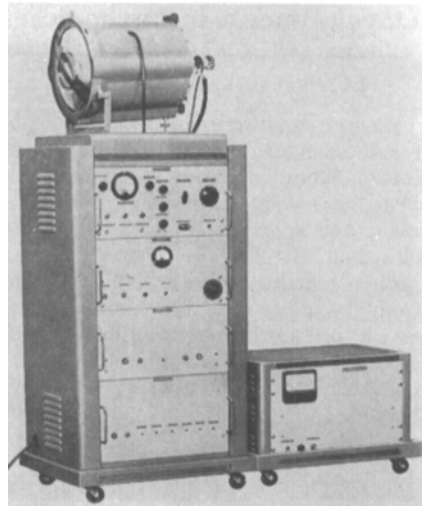
Company sponsors have spent over six million dollars in closed-circuit TV business meetings. This corporate use of a relatively new medium suggests an important future for it.

I am proud that our company,

Theatre Network Television, Inc. — known to the trade as TNT — has presented 90% of all large-screen, closed-circuit TV and that during this coming month it will present its 82nd large screen, closed-circuit telecast. A record of 71 theaters was established for the closed-circuit telecast of the second Marciano-Charles heavyweight championship fight last September, 1954, and we expect to exceed that figure for the coming Marciano-Cockell championship fight on May 16. For the General Motors telecast commemorating the manufacture of its fifty millionth car last November, we established a record high of 52 hotels and auditoriums — the biggest mobile projection network ever organized.

Early closed-circuit TV featured big theater events such as championship prize fights, football, basketball and baseball games and outstanding entertainment attractions such as the Metropolitan Opera. Although some of these important sports and entertainment attractions have continued, they have not yet achieved more than a sporadic schedule. The expansion of this pay-as-you-see closed-circuit function necessarily awaits the next growth cycle of big-screen projection installations in theaters — which may be nearer than many suspect.

Closed-circuit TV for business meetings — what we call Tele-Sessions — offers an important continent-spanning communications system. Transporting corporate management and information rapidly across the electronic network, it saves time and money and brings company communications directly to many who otherwise would be left out.



The General Precision Laboratory Model PB-610 projection equipment, with high-voltage supply at right.

These business meetings have given rise to an entirely new concept of television distribution, resulting in national mobile networks. Since meeting places vary according to the client — hotels, theaters, auditoriums or plants — and since the cities for each client are different, we have developed a mobile network which goes where the client wants. This differs fundamentally from the structure of broadcasting networks whose station affiliates are in permanent locations. Necessarily, the development of a mobile Tele-Sessions network has brought new engineering problems.

The first problem was proper big-screen, black-and-white projection equipment. There are 112 big theater-type projection equipments, including a few intermediate film systems permanently installed in theaters located in about fifty cities, coast to coast. This was the backbone of the early development of Tele-Sessions and was utilized to inaugurate the idea of closed-circuit TV business meetings. In 1952, when Lees Carpets became the first company to utilize large screen, closed-circuit TV, they reached into 17 cities coast to coast, and theaters constituted the basic network. Since then such companies as Dodge, Ford, Chrysler, National Dairy, Frankford Distillers and others have used theaters. Even then, it has been common to supplement the theater cities by installing temporary mobile projection equipment in hotels and auditoriums.

The theater network, convenient and available, gave birth to Tele-Sessions. But as the medium began to grow, it became apparent that the small size of many company audiences and the necessity in some cases for afternoon and evening meeting hours required other appropriate meeting places such as hotels.

The first nationwide hotel network was launched late in 1954, when General Precision Laboratory completed manufacture and delivery to TNT of the first quality projection equipments especially designed for hotels. These equipments were designed for ruggedness, mobility and quality. They consist of two parts: A control rack measuring 5 × 2 × 2 ft, with the projector barrel seated on top and capable of appropriate tilting, and a high voltage supply. These combined parts weigh 570 lb and are rendered easily mobile by their rollers. Accompanying this equipment is a portable screen and a sound unit for use where the hotel has none of its own.

This General Precision unit, labelled model PB-610, was built to use up to forty thousand volts and for easy plug-in to the electrical supply in any auditorium. Utilizing the Schmidt optics system, this projector has achieved excellent quality pictures ranging from 7 × 9 ft to 9 × 12 ft in most of the work to date. It may be capable of even larger picture size with acceptable results. In some 300 hr of program performance in

General Motors President Harlow H. Curtice photographed as he appeared on TNT large-screen, closed-circuit TV, in one of the 52 cites of a coast-to-coast Tele-Session.

TNT closed-circuits, there has not been a single failure in part or whole.

In addition, a large number of large theater-size General Precision projectors, Model PB-600, were rendered mobile for special use to larger audiences. The development of the new quality equipment and the supplement of mobile, large theater-size units have expanded the abilities of closed-circuit TV so that it is possible to offer the type of facilities and services important customers expect. Additional new projection equipment is now being built by other manufacturing concerns which too may meet quality closed-circuit standards.

The delivery of our new projection equipment posed problems of servicing and operating in the field. Every closed-circuit telecast, excluding permanent theater installations, is, in a sense, like going on location — with all the problems involved in operating in a new and strange place each time. On each separate occasion in each city there is problem of shipping the equipment to the designated meeting place, its reception, its check out, the connection of the equipment to the power supply, its firing up, the positioning of the screen and the projection equipment to accommodate the size of the audience, the survey of the audio system in meeting places which often have none, and ultimately, of course, the connection of the projection system to the telephone loop which, in turn, connects into the interexchange channels of A.T.&T. back to the point of origination.

Major national service companies have begun to develop experienced personnel capable of practical handling of such situations, so that each nationwide closed-circuit telecast now has a national army of servicemen who perform the field maneuvers required. The RCA Service Co. and TNT entered into the first national service contract in closed-circuit TV last fall, and this method of field service has been so successful that others have followed.

Having established itself, closed-circuit TV is now at a point where novelty and experimentation can no longer carry the day. More and more, closed-circuit TV is being judged by its performance on a practical and regular basis. Accordingly, the establishment of quality standards has become a necessity in the closed-circuit TV industry. It will be quality performance and service which will enable closed-circuit TV to continue its great growth and it is in this direction that the engineers and technicians have an important role to perform.

I recommend that this Society undertake the role of guide to closed-circuit TV and that it address itself to helping this young industry establish proper standards.

Unfortunately, some recent arrivals in closed-circuit TV are operating on an agency concept of leasing inferior equipment and without background or experience themselves, they are not contributing to the medium. Closed-circuit TV, no less than broadcast TV, requires know-how, judgment and experience — and a dedication to quality performance. The closed-circuit medium will become stabilized as a regular TV service when the network concepts of complete facilities and service become its guiding standards. To this end, TNT has organized the first owned and operated national network in closed-circuit TV by distributing its large screen TV projectors in 41 major cities. They are available for closed-circuit TV at all times. We believe that this network organization will lead to the continuous

development and increase of quality standards.

We have learned throughout the years that it takes effective integration of TV production, long line transmissions, loop connections and large screen projection to achieve the quality pictures and sound required in this medium. The lowering of standards in any one of these TV pipe lines deteriorates the program.

It has become necessary for closed-circuit TV companies to develop special production techniques in the studio or on remote location. The lighting standards for large screen TV are different, for example, from broadcast practice, with much greater intensity and a tendency toward flat lighting. A monumental task was performed in relighting the entire stage of the Metropolitan Opera House last November when its opening night was televised closed-circuit coast to coast. 350,000 watts were brought in by TNT to light the great stage at the Metropolitan Opera House, compared with home TV requirements of about 35,000 watts for a big musical studio production. This perhaps illustrates some of the difference in lighting.

The sensitivity of matching cameras is much greater for large-screen TV. Although in the early days special grey scales were devised for matching cameras to be used for our theater TV productions, we found such tests inadequate. Beginning in 1953, we instituted the procedure of matching cameras by monitoring on large-screen projectors, rather than relying on the small control room pictures.

The skillful use of certain kinds of camera shots, with emphasis on the close-up and tight lenses, has developed as a standard practice for large-screen productions. Since most camera crews are broadcast trained, it has become necessary to develop sufficient experienced large-screen supervisory personnel to guide the camera crews in appropriate telecasting for big-screen TV.

With practice over the years, the telephone system has achieved better results in transmitting the originating signal. It is well known, however, that certain sections of the telephone system, particularly those involving the use of coaxial cable, do not produce generally as good transmission results for large-screen as the microwave links.

There are still restrictive results for large-screen signals when transmitted through the narrow 4-mc passageways of the long-lines telephone system. And there remain definite bottlenecks in clearance and service for closed-circuit by the telephone companies, although this area is improving.

Primarily a growth situation itself, closed-circuit TV must continue to grow technologically too. The first commercially designed black-and-white large-screen projection equipment of seven years ago should be up-dated in every theater. Both the manufacturer and theater operator are responsible.

With the increase in motion-picture size, some theater men believe that the theater TV picture should be larger too, particularly for comparable entertainment attractions. This can and should be accomplished. More recently designed optics systems permit the projection of the world's largest TV pictures. Among some of our mobile equipments are projectors which have exhibited TV pictures in drive-in theaters of 47 × 65 ft, with sufficient clarity and light for audience enjoyment.

As color TV progresses, large-screen color projectors are expected. Some of the pioneering work in this field has produced fabulous prospects for further growth of large screen TV.

But the bright future of technological and business growth in closed-circuit TV should not be dimmed by inferior quality performance today. So I end with a plea for the establishment of and adherence to quality standards for the closed-circuit TV industry.—*Nathan L. Halpern*, Theatre Network Television, Inc., 575 Madison Ave., New York 22.