



Ericsson News

1930

English edition

Managing Editor:

Woldemar Brummer

No. 1-3.

The World Engineering Congress in Tokyo Oct. 29—Nov. 7, 1929.

As a representative for the Swedish State, H. Pleijel, professor at the Technical Institute and vice chairman of Telefonaktiebolaget L. M. Ericsson, participated in this congress, and to the editorial staff he has given an account of his impressions of the exceedingly interesting journey, of the congress itself and not least of all of present-day Japan, its progress in matters of science and research, its industry and technical development and its beautiful, smiling natural scenery.

On September 21 the voyage aboard the motor-liner Kungsholm began from Göteborg, with New York as the first stopping-place, where "The American Committee" had arranged a special train for the European participators in the Tokyo Congress. During the trip through the United States to San Francisco the travellers were given an opportunity to visit Washington, Chicago, the Grand Canyon and Los Angeles. In the neighbouring town of Pasadena a visit was made to the magnificent observatory at Mount Wilson and finally, before continuing across the Pacific Ocean, the journey included visits to several institutions in San Francisco. Here the travellers found a Japanese and an American boat awaiting them, which set out for Japan via Honolulu.

The World Engineering Congress opened with impressive ceremonies in the Hibiya Municipal Auditorium with a speech of welcome by the royal patron of the Congress, H. R. H. Prince Chichibu, brother of the Japanese Emperor. Thereupon the members were welcomed by the

honorary president of the Congress, His Excellency O. Hamguchi, the Japanese Prime Minister, and by the president of the Congress.

The unparalleled scope of the Congress was indicated by the large assembly, 1500 participators, and the large number of addresses — no less than 800 to 900 divided in 12 different sections, of which more than one-third were given by the Japanese. During the World Engineering Congress a sectional meeting had been arranged with "The World Power Conference". The Parliament Buildings had been placed at the disposal of the Congress, and here were also housed allied institutions identified with the work.



Professor H. Pleijel.

The Swedish contribution to the Congress consisted of 15 addresses in 6 different sections — Section I, General Engineering Problems (1 address), Section V, Railway Industry (1 address), Section VII, Electrotechnics (5 addresses), Section VIII, Mechanical Industry (1 address), Section X, Chemical Industry (3 addresses) and Section XI, Mining Industry (4 addresses). Of special interest to our readers are the following addresses of Section VII, closely identified with our branch:

Professor H. Pleijel. — *Induction in a System of Parallel Lines.*

Professor S. Velander:—*Porcelain Insulators and Observations on Insulator Porcelain, with Views on the Causes of Insulator Failure.*

B. Ell, head engineer (Sieverts Kabelverk). — *Present-day Knowledge about High-Tension Cables and Fittings.*

By the Japanese no less than some twenty interesting addresses were held on subjects relating to our branches, principally of theoretical nature, and in the field of radio technics. The following have special interest:

Professor S. Inada, director general of the Technical Department of the Japanese Telegraph Works: "*The Telegraph and Telephone in Japan*", an address that gave the audience a clear grasp of the significant advance made by this progressive country in this field of communication and of the difficulties encountered in the reconstruction of telegraph and telephone systems after the earthquakes that have ravaged the land — difficulties that have been overcome with an unparalleled speed owing to the great energy and endurance revealed.

With enthusiastic comments Professor Pleijel described the brilliant powers of organization revealed by the Japanese in the handling of this gigantic congress, which — due to that very organization — was carried out with exemplary precision. In addition the hospitality, so far as material things were concerned, was so outstanding that it would be hard to find its equal.

The work itself of the Congress in the Parliament buildings filled the day, and in the evenings festivities of different types were arranged during which the role of host was taken by pri-

vate individuals, or industrial companies or groups or by the Japanese government. Of interest was a garden party in the Emperor's Gardens, where naturally, according to the custom of the country, the Emperor himself was not present. His brother, Prince Chichibu, the patron of the Congress, acted as host.

The hospitality did not end with the close of the Congress on November 7, for now the participants were invited on well-ordered group excursions through the country. Professor Pleijel accompanied a group to Kyoto, Osaka, Kobe and other places, where abundant opportunities were offered to see the old civilization in the Land of the Rising Sun. Everywhere youth revealed an intense interest, and Professor Pleijel interpreted their thirst for knowledge as an expression of their patriotism and a desire to serve their country.

These trips gave the travellers enduring impressions not alone of the land of great natural beauty but also — and by no means least — of the splendid results this country has attained in an extraordinarily short period on its course upward, results that have already placed it in the fore among the civilized peoples of the world.

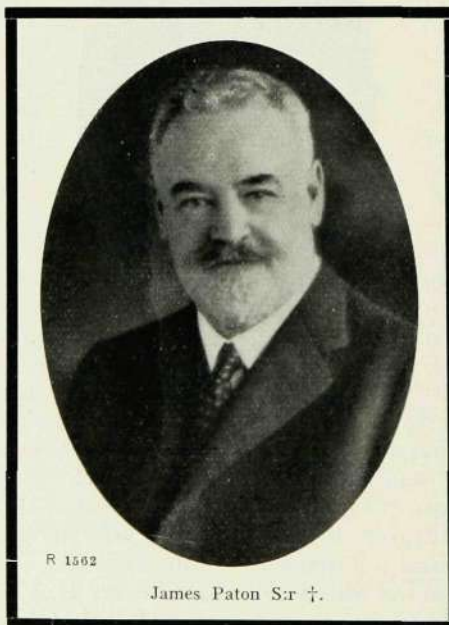
The return journey was made via Singapore and the Suez Canal to Naples.



JAMES PATON, Sr.

With the death of Mr. James Paton in Sydney on May 18th, 1929, Telefonaktiebolaget L. M. Ericsson has lost one of its oldest and most capable representatives in the trans-oceanic field.

Since the beginning of 1902, when the firm J. Bartram & Son in Melbourne became the Company's representatives in several of the Australian states, Paton had been one of the workers in this firm and so had protected the interests of the Company in these remote sections. A few years later he started his own company in Sydney, James Paton & Co., and he was then entrusted with the agency for the states of New South Wales and Queensland. Finally, in 1921 full charge of all the interest of the Company in the whole of Australia was placed in his experienced and competent hands. He then started the Ericsson Manufacturing Company with offices in Sydney and Melbourne and with



representatives in all the more important places in Australia. Under this firm name Paton has had charge of the affairs, not alone of the Swedish Company but also of its English branch office, Ericsson Telephones Limited, in the Commonwealth of Australia.

The tasks that James Paton undertook very frequently made heavy demands on him. But even through the severest tests — during the many years when the World War and its consequences produced almost insurmountable difficulties for trade and communication — he carried out his work and his responsibilities with unswerving

energy and unyielding integrity.

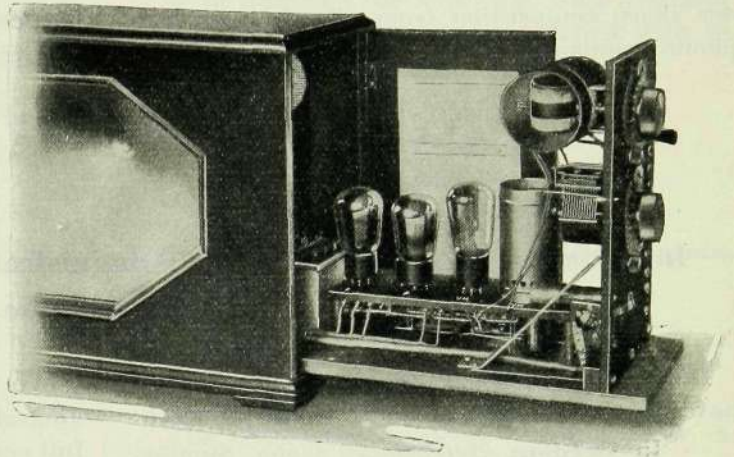
The passing of James Paton means the loss of a capable business man and, what is more, a noble and splendid man — a gentleman in the best sense of the word.

News from Svenska Radioaktiebolaget.

Since the fall of 1928, *Svenska Radioaktiebolaget* (The Swedish Radio Company) has been manufacturing a *D. C. mains receiver* Type HLL, in which an entirely new principle for the elimination of the commutator hum has been applied. In contrast to all other receiving sets now in the market, this one is not equipped with filtering devices of any kind in the form of choke coils, resistances or condensers, the commutator hum being eliminated by means of an ingenious method called a compensating coupling. Due to its low price as compared with its excellent quality, this receiver soon found favour with the general public, a fact which encouraged the taking up of experimental work of a similar nature with *A. C. mains receivers*. Also these efforts were soon crowned with success in that an *A. C.* receiver, type HVL, which in simplicity of the means of the elimination of the *A. C.* hum far excelled all other known receivers of the same type, was constructed in the spring of 1929.

The new *A. C.* mains receiver is a three stage resistance-coupled apparatus with reactive detector and two stages of low frequency amplification. The loud-speaker and receiving apparatus are enclosed in the same box, forming a single "all in one" unit. Thus far the *A. C.* receiver corresponds in every respect to the above-mentioned *D. C.* receiver. It differs from this latter, however, in the fact that it is provided with grid rectification in the detector valve. Further, the first two valves are of the indirectly heated type, the last valve being of the usual type. For the rectification of the anode and grid voltages, a common amplifying valve of the same type as the final valve is used. The hum caused by the pulsations of the rectified current is suppressed by combined resistance — capacity filtering and a new compensating method.

In proof of what has already been stated as to the simplicity of the technical means here used it may be pointed out that no iron choke is used and that the total capacity of the condensers in the apparatus does not amount to more than $3.6 \mu\text{F}$. For the sake of comparison it may be mentioned that the usual method is to use one or two iron chokes and condensers with a total capacity of from 12 to $20 \mu\text{F}$. In



The *A. C.* Mains Receiver Type HVL of the Svenska Radioaktiebolaget.

spite of the simple means used, the *A. C.* hum is reduced to such an extent as to be unnoticeable even when receiving rather weak signals.

The sensitiveness of the receiver has been found quite adequate for long distance reception with ordinary antennae conditions. As it is simple to manipulate and requires comparatively small effect (c. 15 watts), besides being low in cost of production, there is all reason to believe that it will find a ready market and widespread popularity abroad as well as at home.

Both the *D. C.* and *A. C.* receivers are protected in most civilized countries by a number of patents and patent applications.

Automatic Telephone Exchanges of the L. M. Ericsson System.

Since Nov. 1, 1929 (see Pamphlet B 20 E. "List of Ericsson Automatic Exchanges with 500-lines selectors working and under construction Nov. 1, 1929") the following Exchanges have been put into operation:

Argentine: *Compañía Argentina de Teléfonos.*
In **San Rafael** with 280 lines (320 lines under construction), Nov., 1929.

Sociedad Telefonica de Santa Fé.

In **Santa Fé** in January, 1930: — Exchanges:

Central	with 1600 lines	(3400 under construction).
Candiotti	" 240 "	(500 " " ").
Nord	" 500 "	(1000 " " ").

Holland: *Gemeentelijke Telefoon dienst.*

Rotterdam, Jan. 1, 1930.

Central with 6500 (2000 under construction).
Total 14,000 lines now in operation.

Mexico: *Empresa de Teléfonos L. M. Ericsson*,
Mexico City, Jan. 1, 1930:
Colonia Roma with 4000. Total now in operation 7000 lines.

— From the **Royal Swedish Telegraph Department** a new order was received in February for delivery of an automatic telephone exchange of 7500 lines for **Göteborg**.

— The **Telegraph Department of Iceland** has decided to modernize its telephone system. Under sharp competition from all the large telephone companies of the world, the government

has selected the L. M. Ericsson Automatic Telephone system. A contract has been signed with A/S Elektrisk Bureau, in Oslo, which cooperates with the Ericsson Concern, for the delivery of Ericsson automatic telephone exchanges, to begin with the capital *Reykjavik* and the neighbouring town of *Hafnarfjörður* for, respectively, 4000 numbers with extension possibilities up to 9000, and 300 numbers with extension up to 900. The necessary telephone apparatuses are included. The intercommunication between the two centrals, which are situated approximately six miles apart, is to be entirely automatic.

Information from the Central Administration of the Ericsson Concern in Stockholm.

During the year 1929 the following companies have been affiliated with the Ericsson Concern:

— In **Sweden:** *Aktiebolaget Alpha*, Sundbyberg, in which factory the manufacture of bakelite parts and condensers will be carried on exclusively. The company will also continue its earlier manufacture of material testing machines and insulation material.

— The newly formed erection company, *L. M. Ericsson Anläggningsaktiebolag*, mentioned in the last number in the list of "Ericsson Concerns", began its work early this year. In this connection the central administration sent out the following circular:

Stockholm, Dec. 28, 1929.

Our sales in Sweden of installations for local telephones, electric clocks, time recorders, fire alarm signals, etc., have heretofore been handled partly by our erection department and partly by *Aktiebolaget Carbon* in the role of sole distributor of time recording installations.

Because of the constantly increasing scope of this work it has been necessary to entrust it to the care of a separate company, and for this purpose has been formed the L. M. Ericsson *Anläggningsaktiebolag*.

This company begins its activity the first of the year. Through it we shall aim to give our customers the experience that we have accumulated during our activity of fifty years.

We trust that we and this company, *Anläggningsaktiebolaget*, may continue to enjoy your full confidence and faith.

Respectfully
for *Telefonaktiebolaget*
(signed) K. F. Wincrantz.

Simultaneously the newly formed company, "*L. M. Ericssons Anläggningsaktiebolag*", sent out the following:

Stockholm, Dec. 28, 1929.

In reference to the letter of today from the mother company we wish to announce that with *January 1, 1930*, we are taking over the work formerly carried on by the L. M. Ericsson erection department. We execute the following types of installations, among others:

- Private telephone installations
with manual or automatic exchange or
with intercommunication telephones.
- Conference telephone installations
with or without combination with local
telephone.
- Fire Alarm Installations
for cities and communities as well as for
industrial and business enterprises.
- Automatic Fire Alarm Installations
for factories, department stores, theatres
and other public buildings.

Electrical Clock Installations

for official and business use, hospitals, hotels, etc.

Electrical Time Recording Installations

for industrial and business enterprises.

Signal and auto call Installations

of all kinds for factories, hotels, hospitals, offices, etc.

On every occasion it is our pleasure to stand at your disposal with suggestions and information.

Respectfully

L. M. Ericssons Anläggningsaktiebolag.

— In **Germany**, in **Wiesbaden**, a company has been formed and joined to the Ericsson Concern:

C. Theod. Wagner Vertriebs A.-G.

Mail address: Schiersteinerstrasse 31/33.

Cable address: "Wagneruhr".



R 1208

Lieutenant-Colonel G. C. Wassman,
Chairman of the Board of Directors of the L. M. Ericsson A/S,
Copenhagen.

— In **Denmark** the sales agency of the Ericsson Concern was taken over entirely at the beginning of January, 1929, by a newly formed company with headquarters in **Copenhagen**:

L. M. Ericsson A/S.

Mail address: Studiestraede 24.

Cable address: "Ericsson".

As chairman of the board of this company was selected Lieutenant Colonel G. C. Wassman, who for some forty years had acted as the representative of L. M. Ericsson in the country. As managing director was selected Mr. N. B. Som-

merfelt. The new company has also taken over the agency in Denmark that prior to the year 1929 was held for the Ericsson concern by Orla Gordon and by Telefonfabriken Automatic.

— In **Spain**, *Compañía Española de Teléfonos Ericsson S. A.*, Madrid, has opened a branch for sales and erections in **Barcelona**:

Mail address: Via Layetana 18.

Cable address: "Ericsson".

— In **Rumania** the following, with headquarters in **Bucharest**, have been affiliated with the Ericsson Concern:

As Holding company:

Banca Danubiana,

Mail address: 86 Calea Victoriei.

Cable address: Banca Danubiana.

The newly formed sales and erection organization:

"Ericsson" S. A. Română.

Mail address: 86 Calea Victoriei.

Cable address: "Ericsson".

The last-named company is taking over the Ericsson agency in Rumania which formerly was held by *"Energia" S. A. Româneasca*, the latter remaining in the concern as a *manufacturing* company with factory in Cluj.

— In **South America** the following have been affiliated with the Ericsson Concern:

Compañía Argentina de Teléfonos S. A., with headquarters in **Buenos Aires**.

The company holds the telephone concession with the few exceptions of the Argentine provinces that are north of Buenos Aires and west of the river, Rio Paraná.

Sociedad Telefónica de Santa Fé, with headquarters in the city **Santa Fé**, capital of the province of the same name, where the company holds the telephone concession.

Compañía Constructora de Teléfonos y Telégrafos S. A., with headquarters in **Buenos Aires**.

The company will make installations for the operating companies affiliated with the Concern in South America.

Corporación Sudamericana de Teléfonos y Telégrafos S. A., with headquarters in **Buenos Aires**.

Other firms in South America affiliated with the Ericsson Concern have now been brought

together under this newly organized administrative and financial corporation.

— In **Mexico** there has been formed and affiliated with the Ericsson Concern as Holding Company for the Ericsson enterprises in the country:

Compañía de Teléfonos y Bienes Raíces, with headquarters in **Mexico City**.

— During the past year Empresa de Teléfonos Ericsson S. A. took over the majority stock of *Compañía Nacional de Teléfonos, S. A.*, in **Pachuca**, state of Hidalgo.

After this transaction the telephone system and the company's office building were rebuilt. The old local battery system was exchanged for central battery. This reconstruction was concluded during the month of November and the new telephone system was inaugurated on Nov. 30 by the Governor of the state of Hidalgo, Sr. C. Bartolomé Vargas Lugo (see illustrations pages 10, 11 and 12).

— The **Brazil** Sales and Erection Organization:

Sociedade Ericsson do Brazil (see Ericsson News 10—12, 1929, page 1) has moved its offices to:

Rua General Camara 58.

In the **Dutch East Indies** the Ericsson Concern agency

N. V. Indisch Kantoor van Koopman & Co., Bandoeng, has moved from Tjikiniweg 39 (see Ericsson News 10—11, 1929, page 2) to *Tamblongweg 11.*

— **Australia.** The direction of L. M. Ericsson agency in **Sydney**, *Ericsson Telephone Mfg. Co.*, has been taken over by James Paton, Jr., after the death of his father, James Paton.

— Since a considerable number of new enterprises were associated with the Ericsson Concern during the year 1929 and the majority of these were not included in the list published in connection with the International Exhibition in Barcelona, a *new list* is now in process of preparation and will be sent to press in March to be distributed during the month of April.

— *The editorial offices of the L. M. Ericsson Review and Ericsson News* have been moved to the head office of Telefonaktiebolaget L. M. Ericsson, *Kungsgatan 33*, Stockholm.

— **Literature.** *The L. M. Ericsson Review*, No. 4—6 (II Quarterly number 1930, 48 pages), Swedish edition, has come from the press and contains the following articles: *Electricity in modern every-day life*, by Prof. Sten Velander. — *On the localization of line faults with Svenska Radioaktiebolaget's resistance and capacity meters*, by T. Laurent, E. E. — *Some new Swedish types of electric meters*, by O. Jöhnk. — *Instrument for grouping fifteen-minute loads with respect to size (duration meter)*, by F. Jacobson.

— *El Sistema Ericsson de Telefonía Automatica*. Part I, by D. Ignacio M. Echaide, director of the suburban and rural telephone system in the province of Guipúzcoa, San Sebastian, 1929, is a description, in 158 pages, of the L. M. Ericsson Automatic Telephone system with special reference to its adaption to the city of San Sebastian and allied province. The first part of the account, now published, comprises an introduction in two chapters, which explains the fundamental principles of the system. The writer then successively describes the Ericsson automatic scheme and the Satellite system used by San Sebastian: the switching process in connections between subscribers belonging to the same or different satellite centrals and the connection between a city subscriber and one belonging to one of the satellite centrals and vice versa. The volume is richly illustrated and is supplied with diagrams, both general and detailed, and a number of tables that explain the position of the switches at different periods of the switching process.

— *Red Telefónica de la Deputación de Guipúzcoa. Resumen Descriptivo, Historico y Estadístico para la Exposición Iberico-Americana de Sevilla*, by D. Ignacio M. Echaide, San Sebastian, is a handsome thirty-two page pamphlet with a wealth of illustrations that was published for the Exhibition in Seville in 1929, in which the communal administration participated with a model exchange of the Ericsson Automatic telephone system, according to which the Guipúzcoa telephone system in Spain is constructed (S. Sebastian and surroundings). As indicated by the title, the pamphlet comprises a description of this telephone system together with statistical data and the history of the system.

— The **Cableworks Älvsjö** of Telefonaktiebolaget L. M. Ericsson has published its cata-

logue in English, French and German, which contains: Enamelled and Magnet wires, Bell Wires, Telephone Wires, Field Telephone Cables, Cables for Wireless purposes, Wires and Cables for Ericsson Fire Alarm System, Telephone Cables, Bell Cables, Telegraph, Block and Signal Cables, Telephone Cords, Switchboard Cords, Insulation Compound, Tables.

The Catalogue is available to anyone interested by addressing the firm.

— Publications of **Sieverts Kabelverk** include

the following pamphlets, in addition to those already announced, all of which are available on application to the company in Sundbyberg.

Pamphlets:

Oil-Filled Cable Boxes N 51 E, with specifications (56 pages).

Static Condensers (English N 62 E, French N 62 Fr. and Spanish N 62 Sp. editions — 32 pages), a practical guide for use in static condensers for improving the effect factor in an alternating current system.



R 1179

Kind-hearted telephone subscriber: »No, I don't want to get to Mayfair 6281, and neither to any of the seven numbers you have sent me to before; but I am not disappointed, because it has given me eight opportunities to wish complete strangers health, happiness and good luck during the coming year.

(Punch.)

The Ericsson Concern's Electrotechnical Instruction Courses.

The most recent instruction course was held Nov. 8—10 in Stora Hotellet in Örebro with the same programme as that used in Sundsvall (see Ericsson News No. 10—11, 1929, page 3). The number of members was between 500 and 600, who came not alone from the Örebro district but from Värmland, Östergötland, Västergötland and southern Dalarna. Among the participators were a number of prominent persons connected with industrial organizations, heads of electrical power plants, fire chiefs, managers of hospitals, etc.

The *Örebro Engineering Club* had kindly offered its services in the organization of the course, which was carried on in intimate cooperation between the Ericsson Concern and the club just mentioned. The address by Professor Sten Velander, "The Use of Electricity in the Modern Community", which was the introductory address in the Sundsvall course, was here by recommendation of the Engineering Club announced for Saturday evening, Nov. 9, in order that the club members and others interested might participate in as large numbers as possible. After the lecture the Engineering Club had arranged a general subscription supé. It was widely attended both by the club members and by others attending the course.

On Nov. 8, at 11 A. M. the course was opened in the presence of a large audience. The introductory remarks were made by the Manager of the L. M. Ericsson Telephone Works in Stockholm, G. Klemming, who welcomed everyone and expressed his pleasure at finding that so many had decided to attend the course. Thereupon Mr. Klemming briefly outlined the history of the courses, which arose originally through the instruction work begun as far back as 1925 by Sieverts Kabelverk (Sievvert's Cable Works) in its specialized field and later developed to include all branches of the Ericsson Concern after Sievert's had been amalgamated with the same. In this connection Mr. Klemming also outlined the successive development of L. M. Ericsson's from the humble plant begun in Stockholm in 1876 to the world-wide enterprise that now includes more than 40 organizations in different countries. Among others he named especially Aktiebolaget Alpha, Sundbyberg, the latest acquisition of the Concern, which carries on the manufacture of material testing machines, bakelite parts, condensers and insulation material. The speaker then declared that the course was opened, and therewith the lec-

tures began according to the programme announced.

The exhibition of manufactures of the concern included the same material as that already described, in connection with earlier courses, in Ericsson News, augmented now with a material testing machine and some bakelite parts, manufactured by Aktiebolaget Alpha.

The lectures offered during the course have successively been reviewed in brief in Ericsson News. A summary of the two additional lectures, which were held at the 1929 series, is given below.

The next course, the first of the series of 1930, was carried out primarily according to the same programme as 1929 in the Restaurant Valand in Göteborg, February 21—23.

This time the following lectures have been added to the programme: Friday, Feb. 21, from 8 to 9 P. M., "About Radio and Its Use in Different Regions", by Ossian Gertz, engineer of Svenska Radioaktiebolaget.

This lecture, as well as Professor Sten Velander's lecture on "The Use of Electricity in the Modern Community", which at this course has taken place on the same day from 7 to 8 P. M., was held in connection with the meeting of the *Technical Society of Göteborg*.

The programme was further supplemented with a lecture "On Modern High Tension Cables", by B. Ell, chief engineer at Sieverts Kabelverk, and a lecture on "Modern installations for Industry and Agriculture", by E. Jensen, also of Sieverts Kabelverk.

Mr. Ell's lecture on "The Effect of Temperature Variations on wires and fixtures pertaining thereto", which was held in Örebro and which is reviewed below and at a later date will appear in "The L. M. Ericsson Review", was on this occasion excluded from the programme.

Just as in Örebro, G. Lind, gardening director at Experimentalfältet in Stockholm, has given his lecture "Electrical Heating of the Soil in Hotbeds and in the Open", to which lecture members of the *Society of Friends of Horticulture* in Göteborg were especially invited.

— In *Eskilstuna* an instruction course of slightly narrower range was held on March 29—30.

— **Short summary** of B. Ell's lecture on "The Effect of Temperature Variations on Wires and Fixtures pertaining thereto". The lecturer pointed



1561

Gösta Klemming,
Manager of the L. M. Ericsson
Telephone Works in Stockholm.

out how important it is for the constructor of installation material to study not alone the purely electrical characteristics in the material of the manufactured products but also to observe the physical and chemical changes the product undergoes both during the process of manufacturing and in the place where it is located. Particularly the effects of variations in temperature on the manufacture, partly during the manufacture and partly during operation, play the leading role. These effects have been observed first during the past few years, a result of the rapid development in the installation field together with the experience gained in the time during the war. These experiences were gained at a great cost, but still they pointed to the way one should go for attaining better results.

A more intimate cooperation between consumer and manufacturer was found necessary, and for the constructor it was necessary to make a first-hand study of the reason why the installation material in current use did not meet the test. On the one hand this applied to installations in the country with their comparatively often recurring fires in barns occasioned by electrical current leakage and short circuits, and on the other to the constantly increasing demand for cables of higher tension, which resulted in a great many difficulties.

In both cases it was found that the temperature variations were of great importance. The so-called "open" installation system then in use permitted the more or less damp air surrounding the system to be absorbed in the same, where the moisture was condensed to water, while with an increase of temperature the air was again pressed out while the water remained. Continued temperature variations then caused the wiring system to "breathe", so to speak, where with more and more water was collected in the same and this in time resulted in current leakage. To avoid such troubles it was therefore necessary partly to reduce the volume of air within the system to a minimum and partly to cause the system to be hermetically sealed while the length of the wires meanwhile was reduced to a minimum.

For a practical solution of these installation problems reference was made to a lecture to be held by E. Olsson (s. Ericsson News No. 10—11, 1929, pg. 8). Concerning the effect of temperature variations on cables for extra high tension, the problem is more complicated. Even here it is necessary, in the first place, that the whole system is hermetically sealed. The cables for extra high tension as a rule are made with insulation of oil-impregnated paper, which externally is protected with a seamless lead sheath. The materials in the cables being affected by the variations of temperature, the oil, with its greater expansion coefficient, on an increase of temperature, presses out the lead

sheath, which has a smaller expansion coefficient. With a lowering of temperature the oil shrinks more than the lead sheath, which by this time has attained a larger diameter, and the results are that vacuums occur in the insulation layer. These vacuum formations aid in causing the glow-phenomenon, when they are put under high tension, whereupon a carbonization occurs that in time results in the destruction of the cable.

Even in the course of manufacture the cable is exposed to temperature variations, and consequently special steps must be taken for preventing an injurious effect. This is especially the case in connection with the lead covering of the cable. At the testing of cables for extra high tension it is necessary also to guard against injury to the cables owing to unsuitable temperature. The variations in temperature also play an important role in transport, in the laying of cables and during operation.

Just how the hermetically sealed system of Sieverts Kabelverk was solved by the use of oil-filled joint-and-end-boxes is demonstrated in a lecture by E. Olsson (s. Ericsson News, No. 10—11, 1929, p. 8).

The hermetically sealed system is also applied at condensers and installations for heating of the soil in hot-beds.

The injurious effect of variations in temperature in every installation cannot enough be kept in mind, and every means for their prevention is always a step forward for greater safety in operation.

The lecture by B. Ell will be published in extenso in a forthcoming number of The L. M. Ericsson Review.

— **Short summary** of the lecture by N. Thörnqvist on "*Modern Broadcasting*". When broadcasting first began it was received most sceptically and it was only those who were more technically interested who found pleasure in the same. Nor did the first broadcast receivers give any musical pleasure since in those days emphasis was not primarily laid on quality but merely on range. We all recall the time when we were sitting up late at night making every effort to tune in the English stations — the first in Europe — with our headphones connected to very primitive valve apparatus.

At the beginning of 1923 Svenska Radioaktiebolaget began to operate its transmitting station and shortly thereafter also the experimental station of the Telegraph Administration started its work. Those two stations then alternately transmitted programs until 1924. As far as Stockholm with surroundings is concerned, this is to be considered as the first step in the right direction for the development of modern broadcasting.

Modern broadcasting can be defined as that kind of reception which is obtained with as little

disturbance as possible. In most cases this is synonymous with local reception. The worst enemy of broadcasting are the disturbances, which can be grouped as follows:

- 1) atmospheric disturbances caused by electricity in the air, such as occur chiefly in late summer.
- 2) disturbances due to electrical machines of different kinds, such as motors, generators, high frequency apparatus, advertising apparatus, etc. and
- 3) disturbances caused by ignorant or careless listeners.

The disturbances belonging to group 1 cannot be remedied. To make their effect as negligible as possible, the only help is to increase the power of the transmitting stations.

Concerning the second group these disturbances generally may be overcome with noise eliminators of some kind. An ordinary eliminator consists of two condensers connected in series and parallel to the brushes of the disturbing generator or motor. So-called high frequency chokes have also often been used. Nowadays many electrical apparatuses that may cause disturbances are provided with noise eliminators.

In spite of all efforts which have been made to eliminate the disturbances it is safer to consider them as always existing to a certain degree.

As to the construction of the receivers it can be mentioned that their development has run parallel with that of the valves. It was not possible, for instance, to construct the present-day modern receiver with the valves at disposal two years ago. The main advantage of the modern construction in comparison with the old one is that all required current is taken from the lighting system. Thus all batteries have been eliminated.

The advantages gained by using a main connected receiving set compared with a battery operated receiving set are not only that all trouble with the batteries is eliminated but a much better quality can also be obtained on account of the greater power available.

The tone quality of a modern broadcasting receiving set is very close to the ideal. The improvements that will be made are limited primarily to the loudspeaker, on which at present the greatest experimental work is expended. Lately the electrodynamic loudspeaker has become very popular on the market. The latest construction of this loudspeaker is much better than the earlier one. However, it has one disadvantage. A separate magnetizing current is required with the result that it is more difficult to manage and that the price becomes higher than that of the electromagnetic one.

The tendency for the future seems to be an increasing use of electromagnetic loudspeakers in less expensive apparatus, while for more costly installations and those designed for greater output the electrodynamic loudspeaker will gain market.

Another matter of considerable interest nowadays is the so-called electrical reproduction of gramophone discs. It must be pointed out, however, that, in order to compete with the mechanical reproduction, a very good loudspeaker is required and then the question is whether or not the electromagnetic loudspeaker meets this demand.

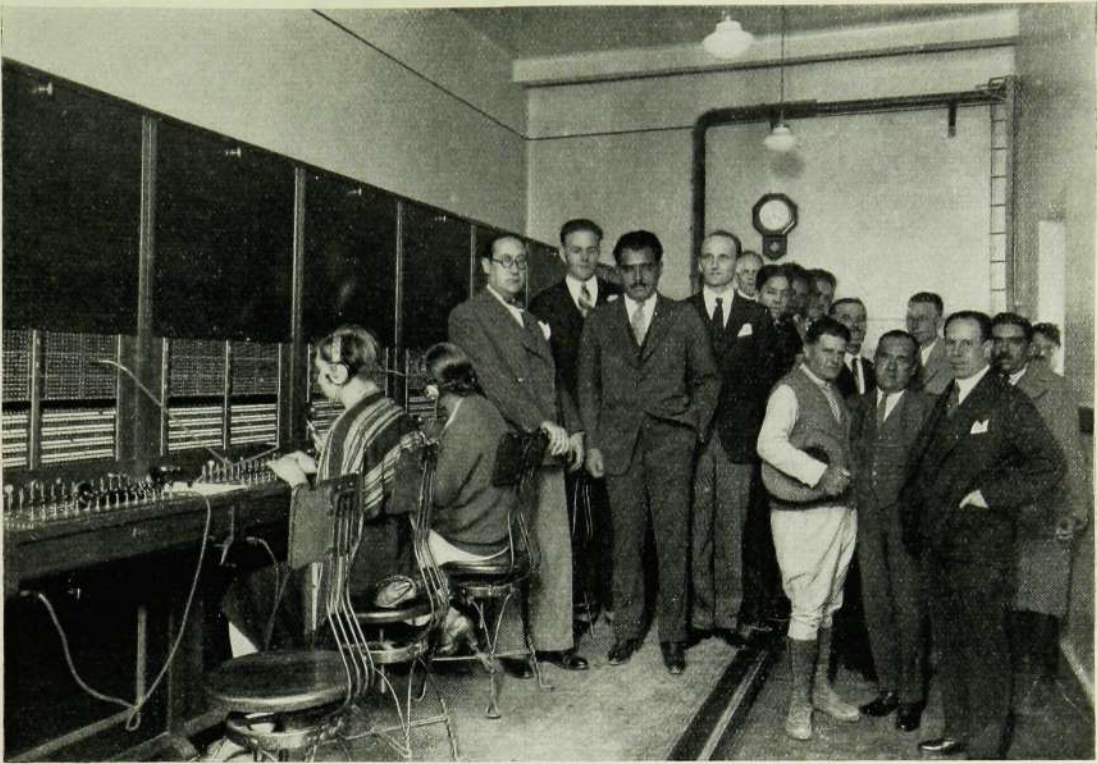
There is, however, one circumstance in favour of the "radiogramophone", even if this should give poorer tone quality because of its less effective loudspeaker, rather than the ordinary gramophone, and that is the possibility of regulating the volume of the sound in the first case by a very simple device.



R 1506

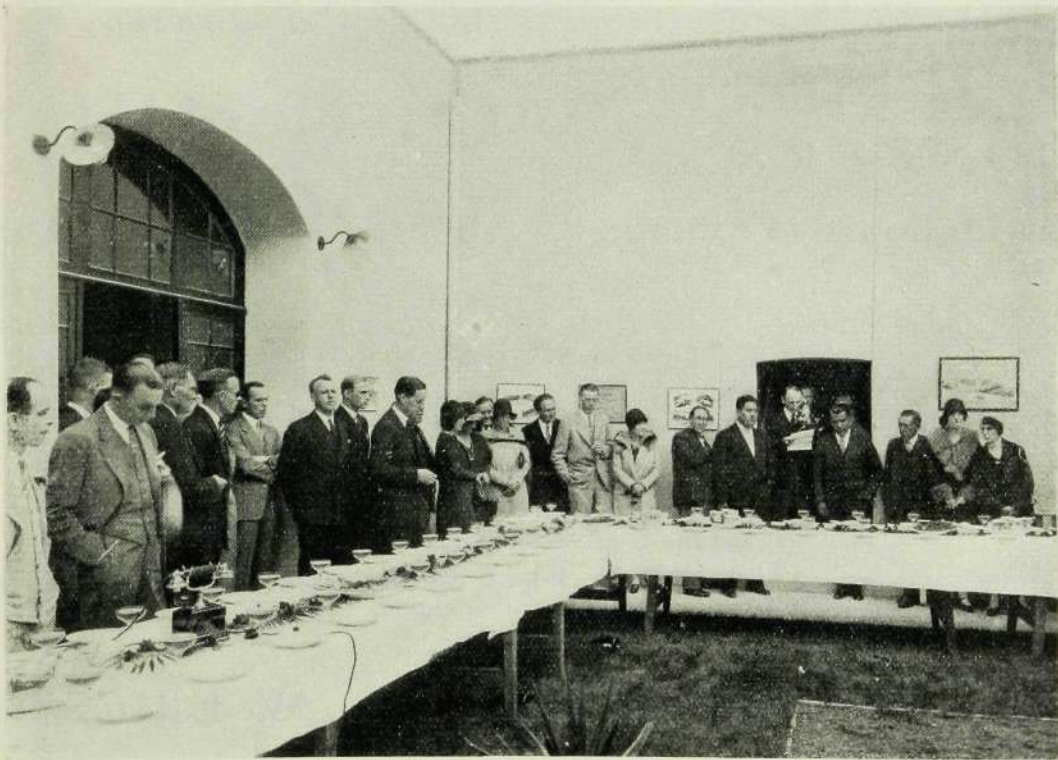
Inauguration of the new telephone system in Pachuca, Mexico (see page 6).
In the centre, at the telephone.

C. Bartolomé Vargas Lugo, Governor of the State of Hidalgo.



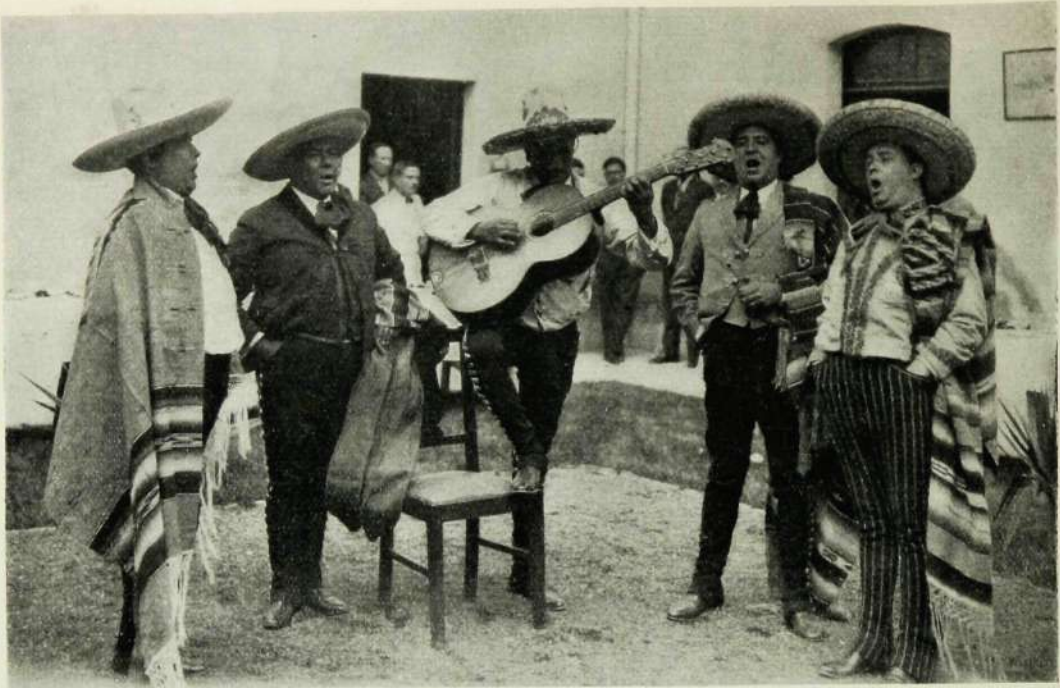
R 1585

Inauguration of the new telephone system in Pachuca, Mexico (see page 6).
Interior of the exchange.



R 1564

Inauguration of the new telephone system in Pachuca, Mexico (see page 6).



R 1503

Inauguration of the new telephone system in Pachuca, Mexico (see page 6).
Cooperating singers from Bajío.

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