



# Ericsson News

1931

English edition

Managing Editor:

Woldemar Brummer

No. 7-9

— **Ericsson automatic telephone exchanges with 500-line selectors** have been opened

in *Argentina*, at Santiago del Estero, Rafaela, and Venado Tuerto, and Gualeguay.

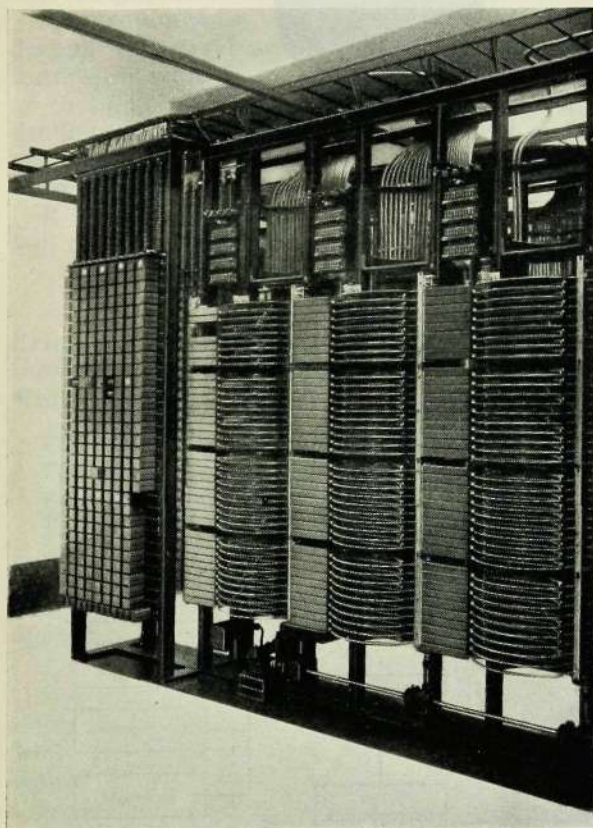
in *Italy*, at Naples, Posillipo, Portici, and in Padova, Potenza, Trapani, Torre Annunziata, Marsala, Nocera Inferiore, and Lecce, all, except the two first named, built on the latest Ericsson system without sequence switches. The last-mentioned exchange is installed by the Società Esercizi Telefonici. Below are two photographs, supplementing each other, of the interior of the Lecce exchange.

— The Amadeo Exchange in *Naples* has been increased by 1500 lines from 2500 to a total of 4000 lines.

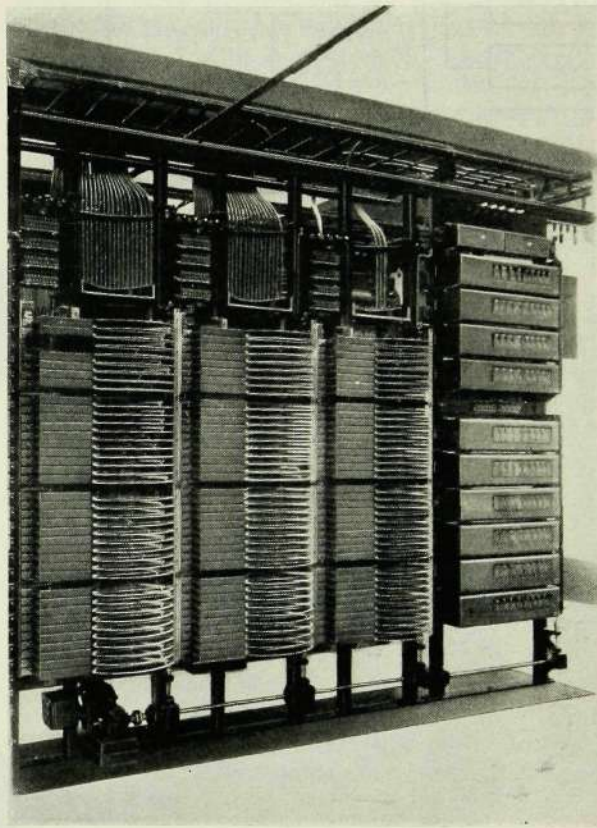
— In *Argentina*, the automatic exchange at Concordia, of 2000 lines, has been increased by 500 lines to a total of 2500 lines, and in Santa Fé the exchanges Maipú and Noroeste to 1000 and 1500 numbers respectively.

— **The trunk exchange of Verona**, built on the L. M. Ericsson system, was opened for traffic on September 20th 1931.

— **Items of news from A/S Elektrisk Bureau, Oslo.** A company, *Studieselskapet for norsk Krafteksport A/S*, was formed in Oslo at the beginning of June to investigate the question of exporting power from Norway, and this export scheme is thereby one step nearer achievement. Besides in-



R 4001



R 4002

Interior of the Automatic Exchange in Lecce, Italy.

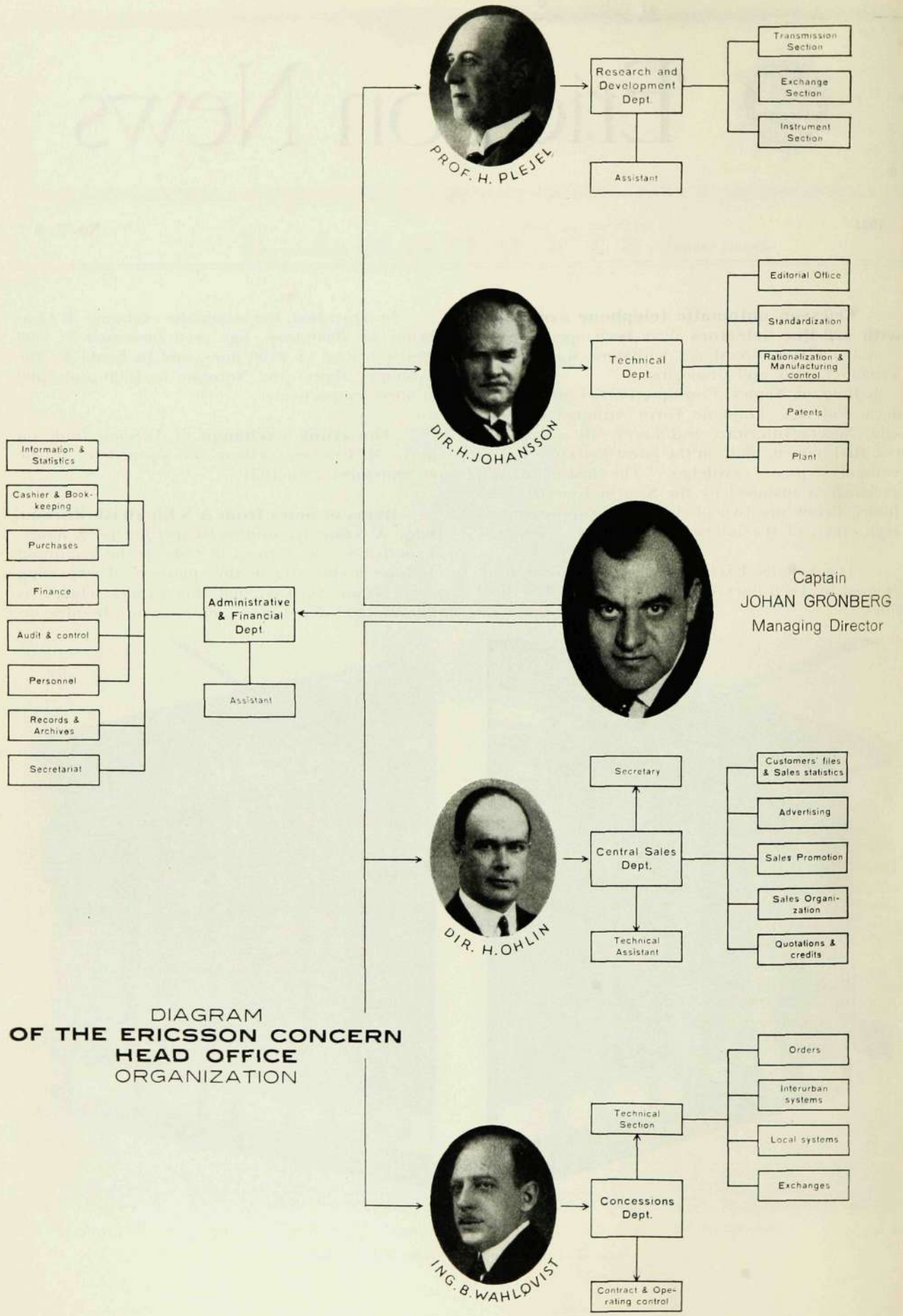


DIAGRAM  
OF THE ERICSSON CONCERN  
HEAD OFFICE  
ORGANIZATION

vestigating the conditions for power export from Norway, the company will prepare a general plan and make all necessary calculations for the operation of power and transmission plants etc. The company will finally also submit a financial plan for this export of power and for the economic utilization of the results of their work. The share capital of the company is 170 000 kronor.

Among the founders is also *A/S Elektrisk Bureau, Oslo*. The following institutions, firms, and private persons have also joined in the formation of the company: the Danish Government, the Royal Board of Waterfalls, Christiania Bank- og Kreditkasse, A. E. G. Electricity Company, Elektrowerke A/G, Felten & Guillaume Carlswerk A/G, A/G Ferrum, A/S Førre, A/S Høier Ellefsen — Mr. F. Selmer A/S, A/S Per Kure, Norsk Motor & Dynamofabrik, A/S Kvaerner Brug, A/S National Industri, A/S Norsk Elektrisk & Brown Boveri, Siemens Norsk Aktieselskap, *Sieverts Kabelverk*, Wolf, Janson & Skavlan A/S for Schweiss-Rohr-Verband, Vereinigte Deutsche Metallwerke, Messrs. E. Berg, Dr. Sam Eyde, Chr. F. Grøner, Major H. Johansen, J. Kinck, F. Kloumann, J. P. Nissen, Alv. Norstrand, A. Paus, and B. Stuevold-Hansen.

A constituting general meeting was held on June 2nd. The following gentlemen were elected to the Board: Mr. B. Stuevold-Hansen (Chairman), Mr. Jacob Prebensen-Nissen, and Mr. Kloumann.

Five committees were appointed, viz. one for dealing with legal and concession questions, one for dealing with the technical and economic aspects of the water power problem in Norway, one for dealing with the transmission problem, one for dealing with the sale of power abroad, and one for dealing with the financial aspects of the scheme.

It is assumed that the activities of the company will be concluded before July 1st 1934.

— **News items from the head office of the Ericsson-Concern.** The central management of the Concern has resolved that the Head Office work shall be done by the following five departments.

*The Administrative and Financial department,  
The Research and Development department,  
The Technical department,  
The Central Sales department, and  
The Concessions department.*

The details of the organization are given in the appended diagram.

The underlying idea has been to organize a Head Office completely independent of the Swedish factories, to be the centre of the whole Concern and with the object of collecting all the experience gained in the various spheres of activity of the Concern and putting this at the disposal of the several companies. In order to enable the Head Office to carry this out, all members of the Concern must inform the Head Office of all their suggestions, experiences and wishes as well as of all work done.

*The Financial department* has been extended to include an *information bureau*, attached to the statistics section. Its object will be to follow the activities of the Concern and its competitors in all spheres, to report general, political, commercial, and financial market conditions, and to investigate relevant questions when required.

The Research and Development department consists of the laboratories, scientific departments, departments for technical development, experimental workshops, etc. of the Stockholm factories, split off from the various factory organizations and put under the direct control of the management; we are very pleased to be able to report that Professor Pleijel will in future be able to give his whole time to the company, and will take charge of this department. — The foreign manufacturing companies will at present not be affected by the formation of this department, and no change will be made in this respect without first thoroughly discussing the matter with them. In order to save as much time as possible, all the manufacturing companies are required to inform the Development department as early as possible of all experiments in progress, to give that department an opportunity of supporting them, avoiding unnecessary double work, and seeing to the requisite investigation of patents etc. The Research and Development department at present works in three sections, one for transmission problems and long distance telephony, one for all matters concerned with exchanges, i. e. telephone exchange systems, district transfer to the automatic system etc., and finally one section for instruments.

*The Technical department* has been increased by a separate *standardization section*, in order to standardize as far as possible the products of the Concern. This department will of course cooperate closely with the Sales department.

The organization of the *Sales department* is not yet definitely fixed; the information requested is being worked up. The Sales department is not intended to interfere directly in the selling, its foremost object being to organize the sales and to determine the general sales policy of the Concern, so that the most shall be made of every market for all the products of the Concern, and the cooperation between the several factories and selling agencies shall reach a maximum of efficiency. For this purpose a standard catalogue comprising our whole range of production will be published under the direction of the Central Sales department, in cooperation with the Manufacturing, Research, and Rationalization departments.

All the departments mentioned above have their offices in Södra Kungstornet, address Kungsgatan 33, Stockholm.

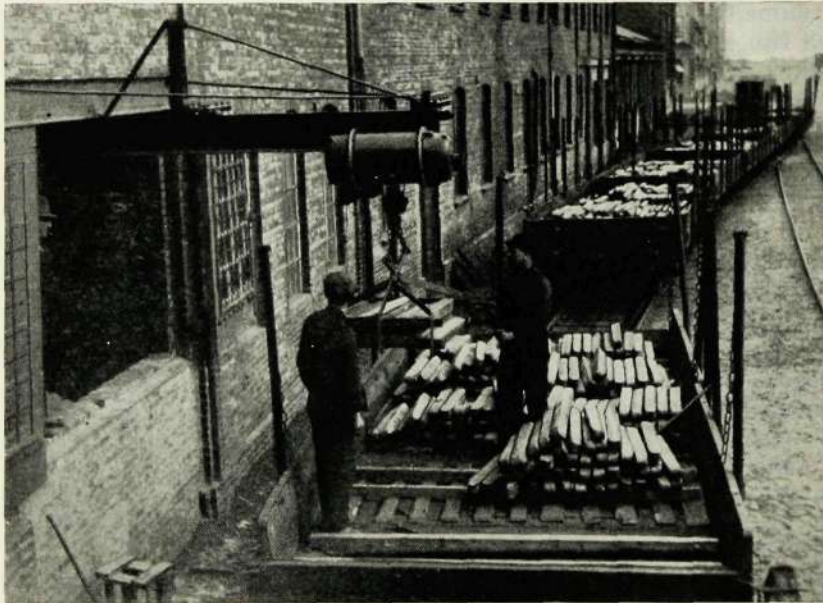
— **L. M. Ericssons Anläggningsaktiebolag** has changed its name to the **L. M. ERICSSONS FÖRSÄLJNINGSAKTIEBOLAG**. Postal and telegraphic address and telephone numbers are unchanged.

— **The Elektromekano Copper Rolling mill.**  
 In Nos. 4—6, 1931, of this journal, a brief announcement was made to the effect that Telefonaktiebolaget L. M. Ericson had taken over the shares of the Svenska Elektromekaniska Industriaktiebolaget or "Elektromekano", Hälsingborg, which had thus become affiliated to the Ericsson Concern.

One of the reasons for buying this firm was our wish to deliver from our own factories the rolled copper wire of which so much is consumed by some branches of the Concern, e. g. the L. M. Ericsson Cable Works at Älvsjö and Sieverts Cable Works at Sundbyberg.

mekano and the latter firm began to supply all rolled copper wire to the cable works of the Concern, the output of the rolling mill was considerably increased. A considerable portion of this output is made into bare drawn copper wire in the drawing mill, partly for its own use and partly for selling, and is spun over in the firm's spinning mill to so-called dynamo wire, which is used for winding electrical machines. This is utilized both in the Elektromekano workshops and in a large number of shops repairing electrical machinery.

One of the largest orders for bare copper wire ever received by Elektromekano was from the



R 3088

"Elektromekano", Hälsingborg. Unloading copper billets.

In 1918, Elektromekano fitted up a small wire drawing mill in order to satisfy its own requirements of copper wire (dynamo wire) for manufacturing electrical machines and so be independent of external supplies, as at that time the manufacturers charged very high prices and also had difficulty in making quick deliveries.

The drawing mill was extended four years later to enable the company to sell bare copper wire also, and was further supplemented by a modern wire rolling mill, for which raw copper was imported in the form of "wire bars", on which up to then there had been no duty in this country.

In 1925 Elektromekano, particularly the copper mill, was ravaged by a large fire. When rebuilt, the rolling mill was extended by several roll stands so as to be able to supply another kind of wire, finer than before, namely 6 mm., which was the raw material for most large cable works. From this time on the firm secured most of the orders from the Danish market too.

Elektromekano is still the only Scandinavian copper rolling mill able to produce such fine gauge wire.

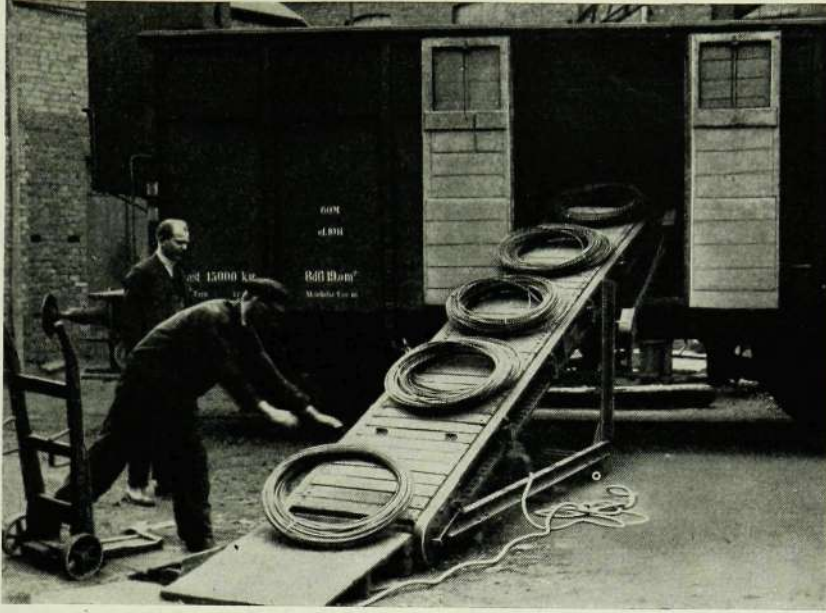
When the Ericsson Concern acquired Elektro-

Swedish State Railways for the electrification of the main line from Stockholm to Malmö. This order was for about 615 tons of contact wire and copper cables for the electric railway plant, to be delivered in the course of the next few years, as the construction work proceeds.

The increased quantity of copper used in the rolling mill has made it expedient to introduce various mechanical devices to rationalize the work. The copper is thus now unloaded by electric cranes direct from the steamer to railway trucks, which are then shunted on to the line to the factory. An electric overhead travelling crane conveys the metal from thence to the furnace in the rolling mill.

Here the bars are made red hot and passed through the various stands of the mill, where they are gradually lengthened and thinned, until they are finally turned out as coils of wire ready for use.

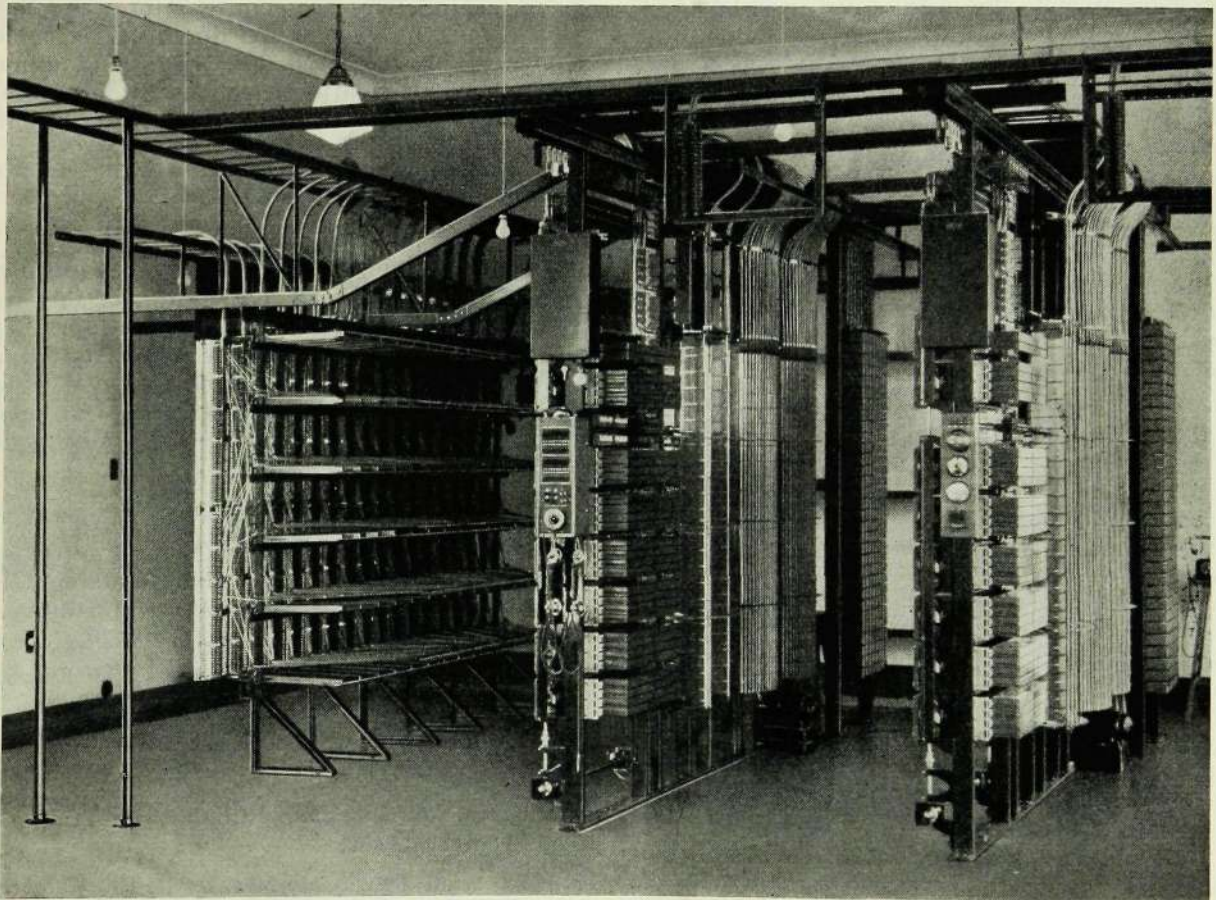
Mechanical devices are also used for handling the ready rolled wire; a "moving gangway" is used to load the railway trucks which carry the wire to its destination.



R 3099 "Elektromekano", Hålsingborg. Loading coiled wire by a "moving gangway".

— In No. 4<sup>to</sup> 6 of the **Ericsson News**, p. 2, it was announced that the exchange at San Francisco, *Argentina*, had been opened for traffic. The

editor is now able to publish a photograph of this automatic exchange.



R 4003

Interior of the Automatic Exchange in S. Francisco, Argentina.

— **New alarm board for the Main Fire Station at Malmö.** In March of this year L. M. E. received an order for an alarm board for the main fire station at Malmö, and 59 fire-alarm boxes to connect to it. The final delivery of this order was made in the middle of September.

The board consists of 4 instrument bays, 3 of which are intended for the connexion of 9 fire-alarm box loop lines (3 loops in each bay), a telephone line from the police station, and control lines from 2 sub-stations (the Limhamn station and another not yet built). The fourth bay is equipped with instruments for battery charging, for station alarms, and for line measurements, etc.

A double Morse instrument is placed in front of each line bay, on a table common to them all. Another double Morse instrument, combined with a time recorder, is placed in front of the fourth bay. This latter records all signals from both the main fire station and sub-station loop lines.

The equipment of the three line bays is similar to that of the latest alarm boards supplied to the Kungsholmen, Borås, Lund and other stations, with the additions necessary for automatic transmission to the main station of fire signals received in the above two sub-stations and for telephone communication from them and their alarm boxes to the police station.

For these purposes a control line is laid from each sub-station to the main station, consisting of a double line, which, for the Limhamn station, will be part of the Board of Telegraph's system. Between the main station and the police station an ordinary telephone line or cable is laid. The control lines are connected at one end to the instrument board of each sub-station, and at the other to the alarm board in the main station. All signals arriving from the alarm-box loop lines of the sub-stations are also transmitted by the control lines to the main station, where they are recorded by the fourth common double Morse instrument.

The fourth bay of the alarm board is equipped with the following instruments etc.:

8 control lamps with press button switches. Five of these lamps are connected in series with five corresponding lamps on a lamp indicator in the fire-engine hall. This board shows which engines have to turn out when an alarm is given. The three other lamps are of different colours (red, green and yellow), and are connected in parallel with lamps of corresponding colours in indicators in the various sections for ambulance, chimneys on fire, police patrol, etc. in the fire station.

6 control lamps and press button switches for turning on the lights in the various buildings of the station in case of alarm. The various groups of lights can be lit separately by the press button switches as well as all together by a knife switch in the master alarm-switch mentioned below.

A stop-clock, started electromagnetically, and connected to contact devices on the fire engines and to a knife switch in the alarm connector. When

the knife switch is closed on an alarm, the stop-clock is set going, and stops only when the controlled car leaves. In this way the time taken for turning out of the station is checked.

The master alarm-switch combines a number of knife switches for starting the stop-clock, for current impulse to the time recorder, for turning on the electric alarm lights, for acoustic alarm in the station, and for lighting traffic signals when the brigade is turning out. All these knife switches may be actuated by a common lever, and can thus be closed simultaneously. 6 press buttons for ringing the various alarm bells in the station are connected in such a way that if the buttons for the bell-groups to be rung on an alarm are pressed in beforehand, these particular bells will ring when the master alarm-switch closes the knife switch common to all the bell-groups.

A voltmeter with switch is provided for testing the battery voltages and the resistance and insulation of the lines.

At the bottom of the bay are 8 switches for connecting and charging the various batteries, and a series of fool-proof jacks for connecting and charging two reserve batteries. These batteries have two flexible cords with fool-proof plugs for connecting them in place of the main batteries to be charged. There is also a switch for the charging current.

As we said above, the line bays and the sub-station control lines are connected to a combined double Morse instrument and time recorder, which stamps on the tape the date, hour, and minute of every incoming alarm-, telephone-, or fault-signal from the loop lines of the main station or the two sub-stations.

Stockholm, Oct. 20th 1931.

— On October 23—25, 1931, the **second electrotechnical course of instruction** of this year was held in the Norrköping Auditorium. The course was opened on the 23rd October, 10.15 a. m. by Mr. G. Klemming, Director of The L. M. Ericsson Telephone Works at Stockholm, who subsequently initiated the series of lectures by giving one on "Automatic fire alarm".

The same day following lectures were also given: Experiences from the <sup>A</sup>activities of the Fire Offices' Electrical Committee, by Torsten Holmgren, Chief Engineer of the Electrical Testing Institute.

Telephones and <sup>S</sup>signalling <sup>P</sup>plants in <sup>O</sup>offices and <sup>F</sup>factories, by Nils Pichler, of the L. M. Ericsson Försäljningsaktiebolag.

Laying and Fitting of lead-<sup>L</sup>sheathed Cables, by E. Olson, Sievert's Cable Works.

During Saturday and Sunday the following lectures were given:

Modern High Tension Cables, by B. Ell, Chief Engineer, Sievert's Cable Works.

Static Condensers for <sup>I</sup>improving the <sup>P</sup>ower <sup>F</sup>actor in A. C. Lines, by A. M. Andersson, Sievert's Cable Works.

Swedish Electricity Meters, <sup>special types of</sup> particularly some special types, by O. Jöhnk, Messrs. Zander & Ingeström.

Electricity and <sup>Fire</sup> the Risk of Fire, by Captain R. Götherström, Head of the Technical Fire Department of the Federation of Swedish Industries.

Regulation of Voltage in A. C. Lines, by J. Arosenius, Chief Engineer of Elektromekano, Hälsingborg.

Modern Industrial and Agricultural Installations, by E. Jensen, Sievert's Cable Works.

Possibilities and Tendencies of Power Transmission, by Professor Sten Velander, <sup>University of Technology.</sup>

<sup>special invitation to Prof. Velander's lecture</sup>  
<sup>lectures were selected to</sup>  
*The members of the Norrköping Polytechnic Association and the Östergötland Technical Association were specially invited to Professor Velander's lecture.*

Bakelite and its Uses, by A. Franchi, Sales Manager, A.-B. Alpha.

Modern Wireless Receiving Sets, by Erik Arenander, Svenska Radioaktiebolaget.

As during previous courses, the lectures were illustrated partly by film and partly by lantern slides, while demonstrations of the material exhibited were given between the lectures. The course was attended by about 400 persons.

— **Literature.** The Swedish, English, German, French, and Spanish editions of *The L. M. Ericsson Review* No. 1—3 (1st quarter — 64 pages) have been published, and contain the following articles: *Svenska Elektromekaniska Industriaktiebolaget*. — *Aktiebolaget Alpha*. — *Bakelite and its uses*, by A. Franchi. — *The A.-B. Alpha material testing machines*, by K. Nilsson. — *Notes on the design and use of bakelite parts for insulating purposes*, by E. Nylund. — *Notes on cable lines for extra high tension*, by Chief Engineer B. Ell. — *The use of thermionic valves for generating multiple frequencies*. — *General theory of disturbances in communication lines caused by power lines*, by Professor H. Pleijel. — *Electric locking frame with all-electric interlocking gear*<sup>1</sup>, by E. G. Windahl. — *A private automatic branch exchange equipped with L. M. Ericsson 500-line selectors*.

*Note 1.* The French edition also contains Professor Velander's article on "Porcelain insulators and insulating porcelain"<sup>2</sup>, which was published in the other languages in No. 10—12, 1929.

*Note 2.* The English edition contains three further articles: "The action of temperature variations on insulated cables and appurtenant fittings", by B. Ell, Chief Engineer, which article was published in the other languages in No. 10—12, 1930; "The Swedish voice frequency signalling system", by M. T. Laurent, and "Totalisator for fully me-

chanised Racecourses", notice from the Ericsson Telephones Ltd, which latter articles will be published in the other languages in Nos. 4—6 and 7—9 of this year. The articles "Aktiebolaget Alpha", — "Bakelite and its uses", — "Notes on the design and use of bakelite parts for insulating purposes", — "The use of thermionic valves for generating multiple frequencies", have for this reason been transferred to No. 4—6 of this year.

— The Swedish, English, German, French and Spanish editions (see note 2) of *The L. M. Ericsson Review* No. 4—6 (2nd quarter) have been issued, and contain the following articles: — *The Stockholm Trunk Exchange*, by A. Lignell, Director of Telephones. — *A review of certain new designs of equipment and measuring instruments for long distance telephony*<sup>3</sup> by T. Lundell. — *The Swedish voice frequency signalling system*<sup>4</sup>, by T. Laurent.

— The Swedish, German, French, Spanish and English editions of *The L. M. Ericsson Review* No. 7—9 (3rd quarters) have been published and contain the following articles: *Totalisator for fully mechanised race-courses*. — *A method of computing the attenuation in a band pass filter, arbitrarily composed of resistances, inductances, capacities and transformers*<sup>5</sup>, by Professor H. Pleijel. — *Constant current instead of constant voltage at the track transformer in an A. C. track circuit*<sup>6</sup>, by T. Hård. — *Investigations regarding mutual induction in parallel conductors earthed at the ends*<sup>7</sup>, by G. Swedenborg. — *Laying and fitting of lead-sheathed cables*, by E. Olson. — *On transmission levels and level measurements in long distance telephone lines*<sup>8</sup>, by I. I:son Swedberg. The other editions will appear before the end of October.

— The Swedish, German, English, Spanish and French editions of *the special number of the L. M. Ericsson Review* published on account of the electro-technical course of instruction at Falun, March 13—15, 1931, contain the following articles: *The Ericsson Concern's electrotechnical course of instruction at Falun March 13—15, 1931*, by W. Brummer. — *Notes on thunder, excess voltages and the effect of electricity on the human body*, by K. G. Sjöberg. — *Practical experiences of the Fire Office's electrical committee*<sup>9</sup>, by T. Holmgren, Chief Engineer. — *Efforts at rationalization in minor power concerns in Dalarna*, by Ove Mogensen. — *Electricity and the risk of fire*, by Captain R. Götherström. — *Modern high tension cables*, by B. Ell, Chief Engineer. — *Swedish electricity meters; some special types*, by O. Jöhnk. — *Modern industrial and agricultural installations*, by E. Jensen.

— *List of companies cooperating in the Concern.* A new revised edition has been published in Swedish. The foreign editions are expected to be issued during December.

<sup>1</sup> Also separately printed, SR. 35. — <sup>2</sup> Do. SR. 33. — <sup>3</sup> Do. SR. 37. — <sup>4</sup> Do. SR. 36. — <sup>5</sup> Do. SR. 40. — <sup>6</sup> Do. SR. 39. — <sup>7</sup> Do. SR. 43. — <sup>8</sup> Do. SR. 38. — <sup>9</sup> Do. SR. 42.

— The **Sievert Cable Works** has published the following additional catalogues and price lists:  
*Catalogues.*

No. 72, Cable fittings, No. 70 Enamel- and dynamo-wire, and No. 68 Sieverts Gebe-material, Swedish edition.

*Price lists.*

No. 502, Material encased in cast iron.

No. 501. Underground cables, oil-filled cable boxes, vulcanized high tension lines, automatic car cables, insulating pipes, cable compounds, Pello-switches, wall contact plugs, soldering apparatus, Gebe material, service material, wire, and high voltage condensers.

The above catalogues and price lists will be sent on request; address: Sieverts Kabelverk, Sundbyberg.

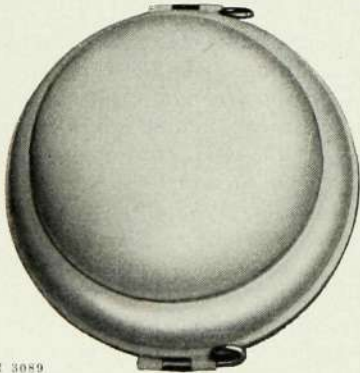
— The July number of the **International Communications Review**, published by the International Telephone and Telegraph Corporation, New-York, contains among other interesting matter an article on "Modern Sweden Industrialized" by Mr. O. G. Marell, Secretary and General Manager of the Swedish Chamber of Commerce of the U. S. A.

In a very small compass Mr. Marell has succeeded in giving a relatively complete account, not only of the present day position and importance of Swedish industry, but also of its rapid development, and has supplemented his account by excellent illustrations.

Beginning with a lightning sketch of the idyllic Sweden of 50 years ago, he proceeds to outline the development of present day industrial activity in all its various aspects. Emphasizing that the underlying principle in practically all Swedish manufactures is high quality rather than mass production, he points out that her industrial progress has not ruined the natural beauty of the country, but has rather increased its significance.

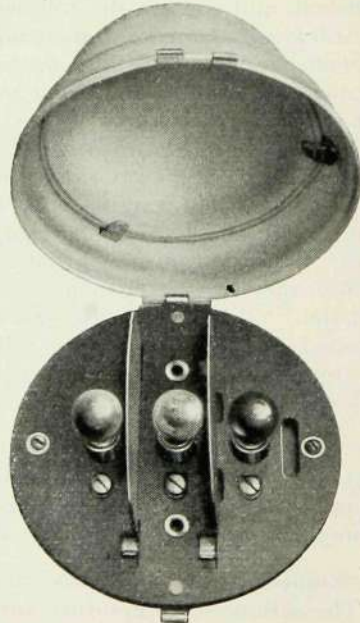
The industries founded on the three great natural resources of the country: forests, iron ore, and water power, as well as those based on Swedish inventiveness and technical skill, are rapidly outlined, and he ends by saying that by reason of her great natural beauty, ancient culture, and recent rapid progress, Sweden offers great opportunities not only to the ordinary tourist, but also to the student of human advance, her records stretching from the time "when income taxes were collected with stone axes" to the present day.

### New Hotel Annunciators, type Ericsson, Vienna, with Tricoloured Signals.



R 3089

Bakelite base plate. The three signal lamps are of different colours, mounted on base plates in miniature fittings, and screened off by partitions which can be removed without having to undo any screws. The lamps consume about 5 watts. The glass cover, of opal glass with a ring, may be taken off the base plate before this is fixed to the wall. When the plate is fixed, the glass cover is put on with its ring, and is thus protected against damage during fixing.



R 3090



— **From the press:** — Under the heading “A Royal Example”, an article in “*Telephony*” points out how modern the British Royal Household is in every way. Special attention is given to the rational organization of both internal and external telephone communications, to make full use of its time-saving and other conveniences. Among other things, the paragraph mentions the King’s interest in hand-microtelephones, and that many of the old standard telephones in Windsor Castle, Buckingham Palace, and at Sandringham have consequently been replaced by instruments of that type. It is only lately that hand-microtelephones have become popular in England, where the old type of upright instruments has so far predominated. This might with some reason be said to have coincided with the introduction of automatic telephones. In Sweden the hand-microtelephone has been known since 1885, when L. M. Ericsson was experimenting with it. The final design was patented by him in 1895, and has since formed an integral part of the “Ericsson” instruments. It has subsequently been extensively used all over the world, even by British manufacturers, though curiously enough only when competing in foreign markets. Up to quite lately it has been shut out of England.

The “*Telegraph and Telephone Age*” gives publicity to the following notice on telephony: “When the modern architect designs a home he must plan for adequate telephone wiring. Nowadays the comfort and convenience of the household and its guests, require that there shall be plenty of telephones conveniently placed so that they may render the greatest possible service with the least effort on the part of the telephone user. Extension telephones are provided, placed at convenient points where the requirements of the household demand permanently located instruments. Telephone outlets are also placed in various rooms, into which portable telephone sets may be plugged as convenience so requires. The telephone “outlet” is simply a “jack” or switch into which the plug attached to the flexible cord of the portable telephone is inserted, thus connecting the instrument with a telephone circuit. In the larger homes where many servants are kept and numerous guests are entertained, an intercommunicating telephone system is included in the house plans.”

Wall jacks for desk telephones, making these portable and movable to the various parts of the house to which telephone wires have been led, have long been used in Sweden and in telephones abroad put up by the Ericsson Concern. These wall jacks were introduced in Stockholm at about the same

time as in Moscow and Warsaw, where the lines were built and operated at the beginning of the century by companies in which what was then Stockholms Allmänna Telefonaktiebolag was the principal shareholder.

— In *L'Electricité No. 8, 1931*, appears a notice of the properties of bakelite in general, and as an insulating material for the electrical industry in particular. This notice is of special interest to our readers and the Ericsson Concern, as all the branches of the Concern nowadays use this insulating material in their products — so that a couple of years ago it became necessary to concentrate the manufacture of bakelite articles for various purposes in a special factory, namely A.-B. Alpha, Sundbyberg. We give below in translation an extract from this paper.

“A new material of great importance has lately gained prominence in the manufacture of electrical parts, namely bakelite, which is now accepted practically everywhere as the best material for base plates, insulators, casings etc.

When switches, terminal distributors, etc. of bakelite were first shown, they were looked upon with doubt. At first they were considered on a level with the numerous products of compressed materials already tried, which had caused much inconvenience on account of their brittleness and slight resistance to heat.

It was soon found with surprise, however, that bakelite differs very much from all compressed materials so far used and that, in contradistinction to these latter, it possesses all the necessary qualities, both electrical and mechanical, for use in the electrical industry.

Experience has clearly established the many advantages of the new material, and bakelite quickly came into general use, to begin with for manufacturing high voltage installation material.

Bakelite possesses exceedingly important properties as an electrical insulating material, e. g. high insulating capacity and great resistance to atmospheric effects; in particular it is absolutely unaffected by variations of weather and temperature etc. These properties have caused it to be used for other than high tension work also, in the manufacture of low tension installation materials and parts”.

Readers interested are referred to two articles on the subject in the L. M. Ericsson Review No. 1—3 of this year: “Bakelite and its uses”, by A. Franchi (p. 7) and “Notes on the design and use of bakelite parts for insulating purposes”, by E. Nylund (p. 21).

## Società Esercizi Telefonici

Photographs illustrating some of the special telephone services provided in Naples.

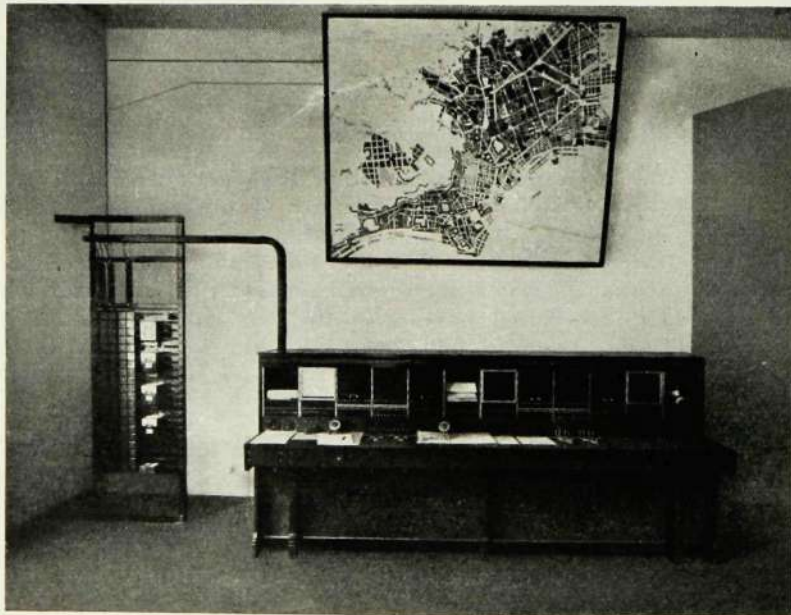


R 1699 Telephone Service for passengers in the Naples Railway Station.

### Taxicab Service



R 1698 Stand Extension Instrument.

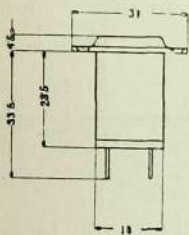


R 1697

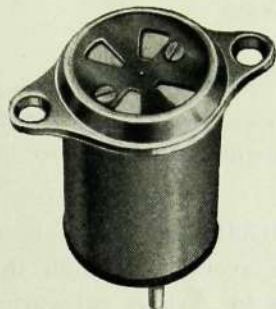
The Taxi Telephone Order Office.

## D. C. Star Indicator: Ericsson Vienna Type.

The armature is provided with a spiral spring returning the indicator to the starting position, which makes it possible to fit it in any position.

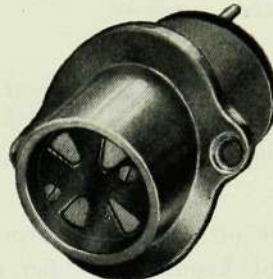


R 3093



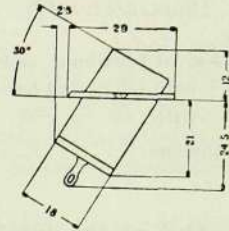
R 3094

RO 101 w  
RO 101 wt

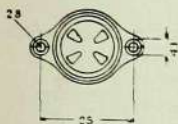


R 3095

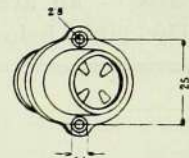
RO 201 w  
RO 201 wt



R 3097



R 3096



R 3098

### Standard design.

Number	Resistance	Weight in kg.	Code word
RO 101 w/120	120	0.021	Rybin
RO 101 w/250	250	0.021	Rycir
RO 101 w/500	500	0.021	Rydir
RO 201 w/120	120	0.023	Ryfis
RO 201 w/250	250	0.023	Rygit
RO 201 w/500	500	0.023	Ryhiv

### Tropical design.

Number	Resistance	Weight in kg.	Code word
RO 101 wt/120	120	0.021	Rylib
RO 101 wt/250	250	0.021	Rymic
RO 101 wt/500	500	0.021	Rynid
RO 201 wt/120	120	0.023	Rypif
RO 201 wt/250	250	0.023	Ryrig
RO 201 wt/500	500	0.023	Rysih

— The Royal Board of Telegraphs' official Statistics for 1930 have been published, and contain among other things some data on the extent and cost of telephone traffic in Sweden, which may be of interest to our readers. From the figures given there the Editor has compiled the following table.

By December 31st. 1930		Increase since				
		1929		1921		
		absolute	per cent.	absolute	per cent.	
<i>Number</i> No. of exchanges .....	4 008	194	5.0	920	30.0	
No. of telephone instruments ..	522 454	27 142	5.5	146 020	39.0	
Total length of metal telephone lines..... km	960 803	58 515	6.5	304 916	46.5	
<i>Number</i> No. of telephone calls:						
without period fee	745 969 200	35 884 200	5.1	237 628 100	46.7	
with           »           »	44 994 144	790 963 344	1 764 439	37 648 639	4.1	
Income..... Kronor	85 134 113	3 961 670	4.9	since 1926	12 798 759	17.0

Out of the total income of 85,134,113 kronor, 29 989 531 kronor comes from 43 624 286 taxed calls — an average fee of kronor 0.69 per call. The average is much the same for 1929 also. The table below shows the distribution of the call fees to various categories.

Taxed calls	1930		1929			Increase						
	Number	Fee		Number	Fee		absolute			per cent.		
		Total	Average per call		Total	Average per call	Number	Fee		Number	Fee	
								Total	Average per call		Total	Average per call
<i>Domestic</i> Inland trunk call..	42 614 338	27 202 684:—	0.64	40 850 320	25 973 557	0.64	1 764 018	1 229 127	0.00	4.3	4.7	0.0
International traffic	1 009 948	2 786 847:—	2.78	974 490	2 548 665	2.60	35 458	238 182	0.18	3.6	9.4	6.9
Total	43 624 286	29 989 531:—	0.69	41 824 810	28 522 222	0.69	1 799 476	1 467 309	0.00	4.2	5.1	0.0

During 1930 the average number of three-minute periods per inland trunk call was 1.4.

The distribution of the inland trunk calls among the several line distances is shown by the following table.

Distance <sup>in</sup> km <sup>1</sup>	Fee per 3-minute period		per cent.
	Day and night calls, made between 9 a. m. and 6 p. m., or 11 p. m. and 7 a. m.	Morning and evening calls made between 7 a. m. and 9 a. m., or 6 p. m. and 11 p. m.	
Not exceding 45.....	20 öre	20 öre	30.54
45—90 .....	30 »	30 »	31.53
90—180 .....	50 »	40 »	17.58
180—270 .....	70 »	50 »	8.59
270—450 .....	90 »	60 »	8.30
450—540 .....	110 »	70 »	2.41
450—630 .....	130 »	80 »	0.43
630—720 .....	160 »	90 »	0.21
720—810 .....	200 »	100 »	0.24
Above 810.....	250 »	110 »	0.17

<sup>1</sup> The free traffic radius of the exchanges is 20—40 km.