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metkem

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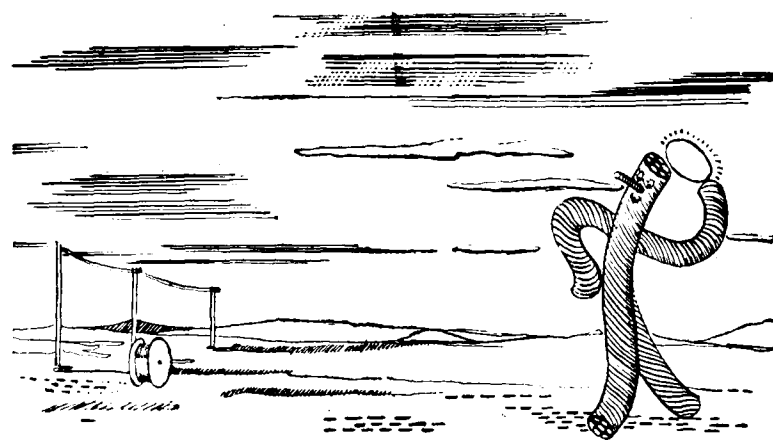
Rectification of Alternating
Currents

&

Other Usual Features

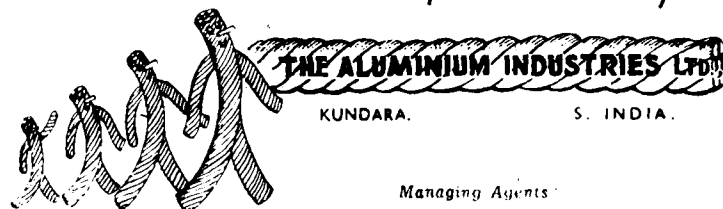


Sri S. Vaidyanatha Iyer, Chairman, Board of Directors,
Sri A. Desai, Collector, Salem and
His Excellency Sri Sri Prakasa, Governor of Madras.



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METKEM

A JOURNAL DEVOTED TO THE HEAVY
CHEMICAL INDUSTRY

NEW CAUSTIC UNIT

A welcome bit of news in recent days is that of commencement of production by the Travancore-Cochin Chemicals, Limited, Alwaye—a new plant for the production of caustic soda.

As a heavy chemical, caustic soda is of great importance to the soap, paper, dye-stuffs, vegetable oil, rayon and other ancillary chemical industries. India's annual requirements of caustic soda are estimated to be 45,100 tons. The combined installed capacity of the six units at present engaged in the production of caustic soda is of the order of 19,068 tons only. Even if we take into account the

production by certain units of their own requirements of caustic soda, we get a capacity of another 3,000 tons only. It will be seen, therefore, that there is a large gap between indigenous production and consumption.

Designed for a production of 20 tons a day of rayon-grade pure caustic soda, the new Alwaye plant is the biggest single unit in the country. It is hoped that it will reduce to some extent our dependance on foreign imports.

We extend to Travancore-Cochin Chemicals, Limited, our warmest greetings and very best wishes.

* * * *

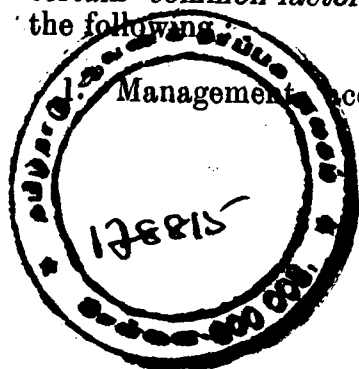
By the Way -

Salt Export: An Indian industry which has made rapid strides in progress in recent months is the Salt Industry. Within two years of attainment of self-sufficiency, this industry has developed an exportable surplus. Production has gone up from 55 million maunds in 1951 to 60.5 million maunds in 1952.

A principal overseas customer is stated to be Japan; she uses Indian salt as a raw material for her chemical industry.

* * * * *

Labour Relations in U. S.: An article in a recent issue of the *Readers Digest* discusses the subject of labour relations in the United States of America. In 1947, according to this article, a Washington organization known as the U. S. National Planning Association set up a committee of 29 experts to investigate a number of companies where relations between management and workers were harmonious. In all the companies studied there were certain common factors such as the following:



Union as permanent and having positive value.

2. Management gives careful consideration to human relations, and devotes brains and money to a top-notch personnel department.

3. Management recognizes the Union as a political institution responsible to the rank and file.

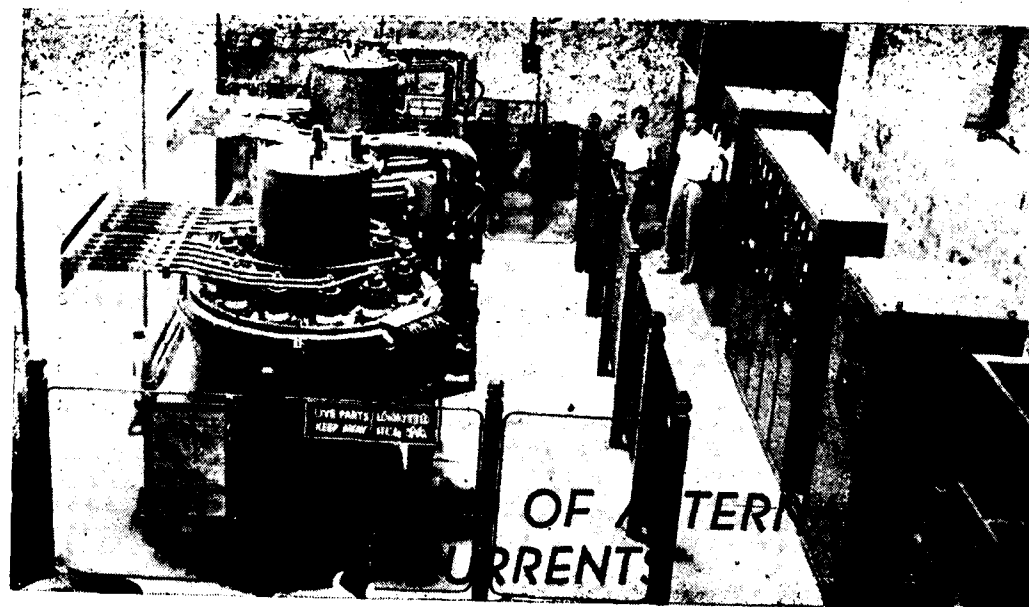
4. The Union unreservedly accepts the necessity for the Company to operate at a profit.

5. Labour accepts management's responsibility to run the business. The union ceases to be a protest committee and becomes a watchdog.

6. Union and management both subordinate drives for power, and search for a way to accommodate their differences.

7. Both union and management use the problem-solving approach, rather than the legalistic approach.

8. Both union and management keep communication lines open, ready to discuss nearly anything, at any time, anywhere.



by S. RAMAMURTHY, B. E.

THE use of direct current for traction, battery-charging and electro-chemical purposes, in ever-increasing quantities, has been the cause for rapid development in the direction of new inventions for conversion of Alternating Current (A.C.) into Direct Current (D.C.). Though the motor generator set is the straight solution to the problem, it suffers from the disadvantages of low efficiency, arcing troubles due to poor commutation, commutator wear and tear, bearing wear, etc. A good portion of the power is lost in overcoming friction and windage of the rotating parts.

I shall briefly deal with the rotary types of conversion plant.

(1) *Motor Generator Set:* In this set, the input A. C. power is made to drive a motor which in its turn drives a D. C. dynamo, the latter giving out the direct

current needed. The desired variation of voltage and current is obtained by the introduction of rheostats in the main-field-circuit of the D. C. generator as also in the field-winding-circuit of the D. C. exciters.

(2) *Motor Converter:* In the motor converter, both the A. C. and D. C. windings are combined into one. Alternating current is fed to one side of the rotor winding, and direct current is collected off a commutator on the other side. The armature of the converter can have either a single winding, connected with the slip rings and commutator, or two separate windings. In the latter case, one of them has to be connected with the slip rings and the other with the commutator. In the case of a converter, it is not possible to get a direct current of any voltage from a given alternating current supply.

* Being a paper presented to the Society of Technologists at its meeting held on July 24.

as the A. C. and D. C. are put in and taken out respectively, from the same winding. For example, for 100 volts of alternating current supplied to the machine, we would get about 70 volts D. C.

(3) *Transvector*: This is yet another contrivance for the mechanical rectification of A. C. In this machine, the armature is stationary and the brushes rotate. We have facilities here for transforming the input voltage according to our D.C. requirements, and multiplication of the number of phases, to get at as smooth an output of D. C. as possible. In one design, the transformer element of the machine is designed with 18 magnetic circuits to give 36 secondary voltages displaced from one another by 10 degrees. The brush gear is run by a separate 15 h. p. motor. The overall efficiency is very high and is of the order of 98 per cent. Machines to handle 7000 kW at 100 kV have been constructed.

(4) *Rotary jet Rectifiers*: Instead of brushes, rotating jets of mercury are used in this type. High efficiency is claimed for these even at low loads. An improvement in the direction of achieving sparkless commutation has been the use of a hydrogen atmosphere in a rectifier. Hydrogen is one of the very few gases in which molecular dissociation such as that caused by an electric arc is accompanied by the absorption of a considerable amount of energy. In the jet-wave rectifier, the hydrogen atoms created during the commutation move away from the vicinity of the spark, until they come

in contact with the cool walls of the rectifier chamber, where they are absorbed and where they give up their energy, to re-combine into hydrogen molecules. The energy of the spark is thus rapidly transported and distributed over a wide area resulting in a correspondingly more rapid quenching of the arc. As an alternative to hydrogen, ammonia vapour has been used. This immediately dissociates into a 1:3 mixture of nitrogen and hydrogen with a marked quenching effect on the spark. Units up to 300 kW capacity have been made.

Other Types: Turning now to other types of conversion plants, I shall just deal with the Contact Rectifier. This is the latest type of convertor. The principle is similar to the motor generator set, but efficiency in this type is higher, on account of the elimination of the heavy rotary armatures and a substitution with vibrating contacts, which make and break the A. C. at the starting and ending of each half cycle. This type has been found to be very efficient in the voltage range of 50 to 400 volts, and although it appears at first sight that the frequent "make-and-break" should prove costly for maintaining the rectifier, actually, it is found to be cheaper in the long run. This is particularly advantageous for small plants where the output D. C. voltage is less than 400, and where we would require efficient operation within the range of 100 to 250 volts, whereas the mercury arc rectifiers become fully efficient only at higher and higher voltages.

Finally, I shall deal with Mercury Arc Rectifiers. The principle of the arc

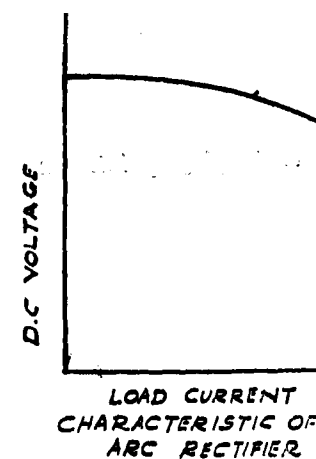


Fig. 1

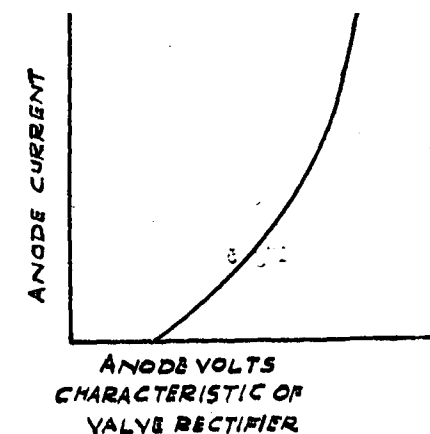


Fig. 2

Fig. 3
 T_1, T_2 : Rectifier Transformers.
 Primary: Star-connected.
 Secondary: Double six-phase
 C_1, C_2 : Cathode circuit-breakers
 N : Neutral point.

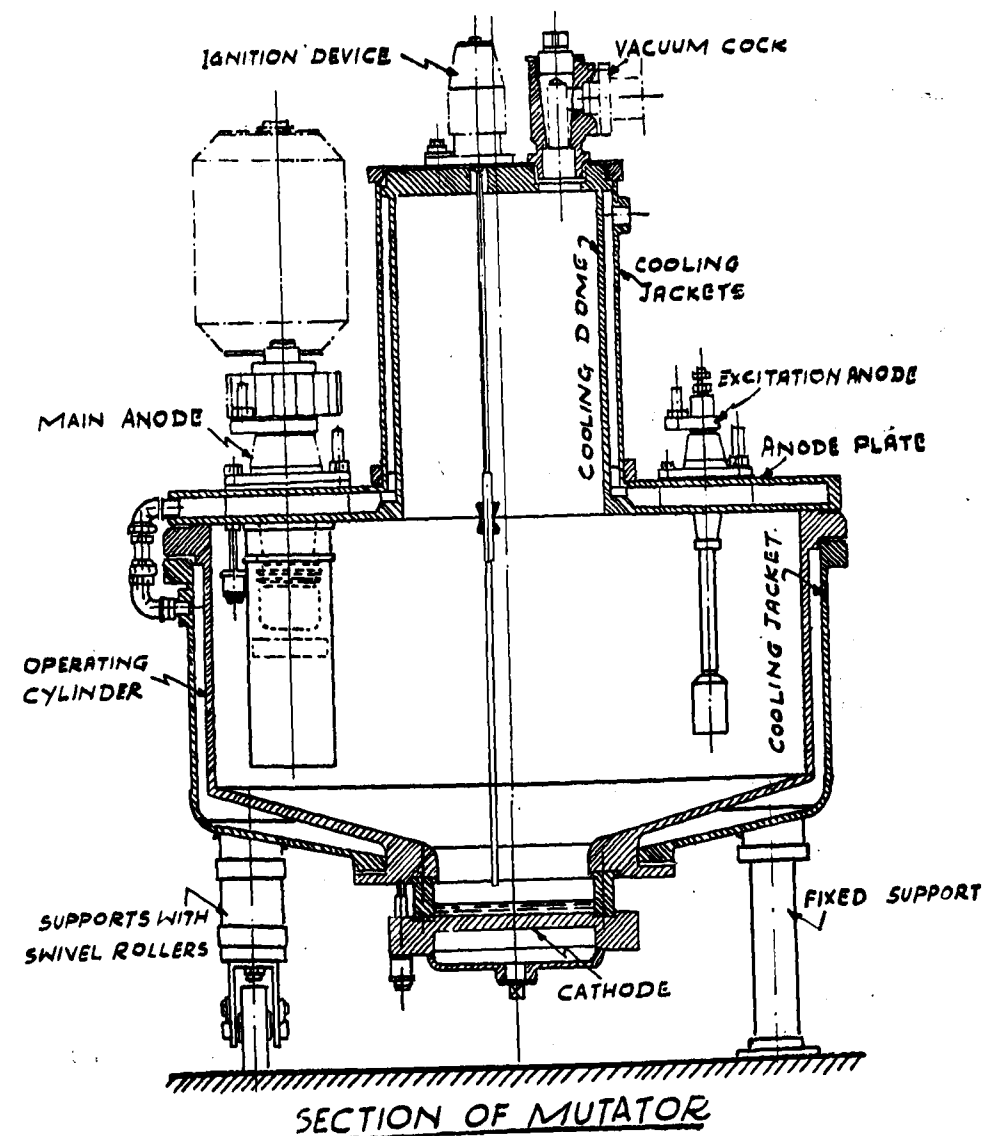
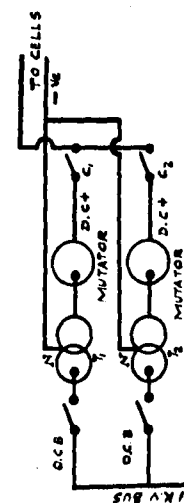


Fig. 4

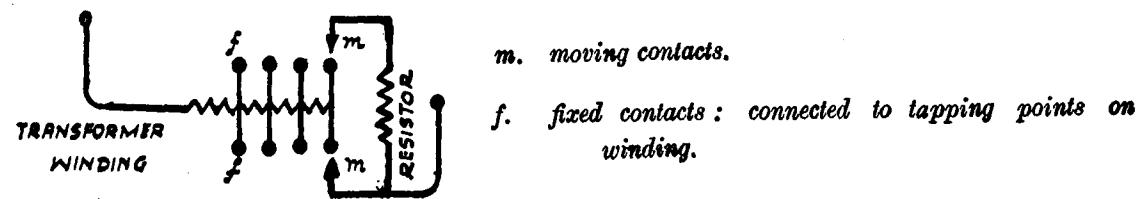
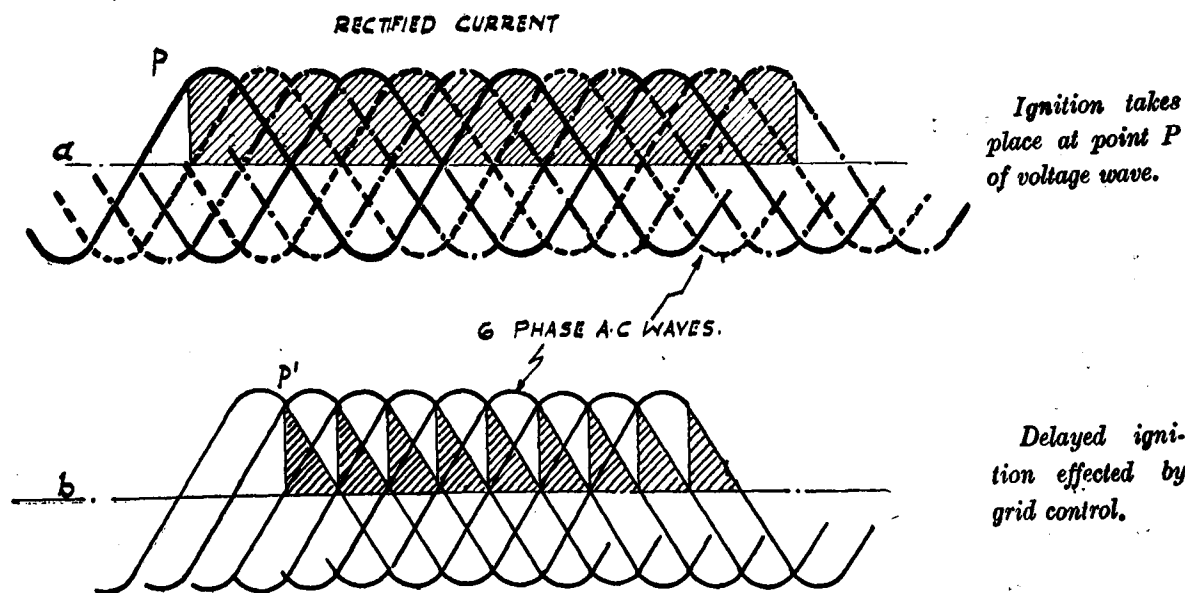


Fig. 5



Figs. 6 & 7

Grid Control Circuit.

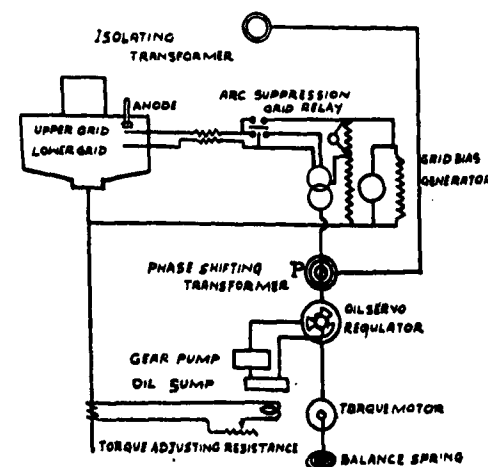


Fig. 8

rectifier was first found in 1880 by Edison subsequent to the manufacture of the carbon arc lamp. He found that if a metal plate or electrode was mounted adjacent to the carbon filament in the evacuated lamp bulb, a current flowed through the space between the plate and the filament, when the former was positively charged. No current passed when the plate was negative. The nature of the phenomenon observed by Edison was not explained till 1899 when J.J. Thomson found that the red-hot filament in a hydrogen atmosphere emitted negative electricity in the form of electrons having a mass equal $1/1800$ of that of the hydrogen atom.

Any rectifier must physically possess a non-linear volt-ampere characteristic, if it is to rectify a fluctuating current—that is, the increase of current for a certain increase of voltage in one direction should be different from the increase in the other direction. With a linear volt-ampere characteristic, no rectification is possible. What is meant by a perfect rectifier in ordinary parlance is that type of rectifier which does not allow any current to pass through it in one direction. The volt ampere curves (figs. 1 and 2) of an ordinary radio rectifier valve and a mercury arc rectifier illustrate this point.

Before describing the mercury arc rectifiers recently installed in our factory, the principles of conduction of electricity through a vacuum or gas may be considered. Under ordinary conditions, a vacuum or gas does not conduct electricity. If by any means, a motion of electrons could be created, then the space

would become conducting. Electrons could be produced by emission from an electrode at high temperatures. In an ordinary gas, all the electrons given out from the cathode are not attracted by the anode, due to the mutual repulsive forces between the electrons. The presence of even 0.1 micron pressure of mercury has been found to eliminate this effect which is known as the "space-charge effect." The use of a mercury cathode in the mercury arc rectifier is also due to the fact that mercury remains liquid at ordinary temperatures, and can be condensed easily, thereby making it possible for the cathode to be kept constantly replenished.

OUR RECTIFIER UNITS

The two Brown Boveri Rectifiers installed in our factory and commissioned recently are designed to operate at 4000 amps. each and, when put in parallel, can give 8000 amps. at 250 volts for running both the Hooker and Billiter Cells. Fig. 3 shows how these are connected. The rectifiers are supplied with transformed A. C. voltage from two-star-double-six-phase 11 kV/250 volt, rectifier transformers each of 480 kVA.

The rectifier (fig. 4) comprises a jacketed steel tank of welded construction with the anode assembly in the top cover and the cathode of mercury at the bottom. The tank is water-cooled to dissipate the heat of the arc, while the rectifier is on load. The anodes are of graphite mounted to insulators fitted to the top cover. The cathode of mercury is also insulated from the body by a silica ring. A vacuum of

nearly 10^{-3} mm. of mercury (absolute) is maintained inside the rectifier by a high vacuum pump. The vacuum is indicated by a special, electrically-operated vacuum gauge capable of reading upto 10^{-3} mm. of mercury. To start the rectifier, the mercury has to be vaporised initially, and for doing this a separate ignition device is provided. This consists of a solenoid and plunge-rod which is connected to the supply through the mercury. When the contact is made and broken, an arc is formed, and this is made to persist by two excitation anodes. As soon as the excitation anodes come into operation, the solenoid operating the ignition mechanism is cut out. The excitation arc thus established, serves to maintain the cathode spot at no load and very light loads, when the power arc current falls below the minimum necessary for keeping up the temperature of the cathode spot. The arc is struck from the anodes to the cathode in quick succession and the direct current is obtained between the neutral of the rectifier transformers and the cathode of the rectifier.

REGULATION OF VOLTAGE

For regulating the D. C. output voltage two methods are available. One is by tap changing on the transformers and the other by grid control. As the rectifier directly transforms the A. C. voltage any desired variation of D. C. voltage can be obtained by the variation of the transformer voltage. As the variation will be required to be done on load, an on-load tap-changing gear is provided on the transformer. This is operated by a 3-phase

motor and two solenoid contactors which serve to run the motor in either direction. The contactors can be energised from the switchboard, and either lowering or raising the taps on the transformer is achieved. The principle of the on-load tap-changer is indicated in (Fig. 5). A resistor is employed to avoid breaking the circuit while the taps are changed. The range available with tap-changing is from 20 to 250 volts.

For the lower voltage range of 0 to 200 volts, the regulation of voltage is done by grid control. The grid is similar to that used in a thermionic valve. It is interposed between the anode and the cathode. By varying the potential of the grid the flow of electrons between the cathode and the anodes can be varied. By impressing the grids with a sufficiently large negative potential, it is possible to completely stop the passage of the arc. On the other hand by making the grid more and more positive, it is possible to increase the electron current.

There are two grids between each anode and the cathode. One of these is connected to the D. C. supply from an auxiliary motor generator set. The other grid is connected to A. C. voltage from a special delta-six-phase transformer, capable of giving a peaked output voltage wave. A phase-shifter is interposed between the main supply and the transformer, and with this, it is possible to shift the phase of the peak voltage applied to the grids through a range of 0 to 180 electrical degrees, so that the moment of ignition can be varied to occur at

any point between the maximum and zero of the A. C. voltage wave. When the ignition is delayed more and more, the portion of the A. C. wave rectified becomes less and less and the output voltage which is the average of the rectified portion of the A. C. waves becomes less and less. When the voltage is decreased very much by means of the grid control, the power factor of the supply system drops down considerably. (Figs. 6 & 7).

OTHER FEATURES

One of the note-worthy features of the rectifiers is the automatic current control equipment with the help of which it is possible to maintain current to the cells constant. A special D. C. transformer supplies an alternating current proportional to the output direct current, to a Ferraris motor drive through a variable resistance. (Fig. 8). The shaft of this is directly coupled to an oil pressure regulator which is connected by a link system to the rotor shaft of the phase shifter P. supplying the primary of the grid transformer. The torque on the motor is balanced by a coil spring. The position of the rotor of the phase shifter is varied by the oil pressure regulator, if this balance is disturbed due to the variation of the rectified current. The phase of the peak voltage from the grid transformer can thus be shifted to any desired extent and the value of the rectified current is maintained constant. When the maximum position of the phase-shifter is

reached, further increases of voltage are effected by switching over to tap-changing.

The other features of the installation are :

1. The current can be read at the cell room.
2. The plant can be switched off from the cell room in an emergency.
3. The A. C. input power for electrolysis is metered separately.

Before putting the rectifiers on load for the first time it is necessary to drive out all traces of gases from inside since these would interfere with the proper functioning of the rectifiers on load. This is accomplished by carrying out the process known as "formation of the rectifier". For this the voltage on the rectifiers is reduced to about 50 volts by feeding the primaries of the rectifier transformers from another step-down transformer of suitable ratio and capacity. A water resistance is arranged in the external circuit of the rectifier and the load is gradually increased to the rated current of rectifier over a period of two to three days. After the rated current is maintained for about four hours, the rectifier is ready for service.

The efficiency of the rectifier varies directly as the terminal voltage, and the higher the voltage the better will be the efficiency as well as the power factor of the supply system.



Sulphuric Acid from Magnesium Sulphate : A new process for the production of sulphuric acid from magnesium sulphate is reported from Eastern Germany. The process is similar to the anhydride process with this difference—namely, that instead of calcium sulphate, magnesium sulphate obtained as a by-product of potash mining and purification is used as the starting material. The high quality magnesia obtained makes the process more economical than the anhydride process.

Recovery of Nickel and fat from spent nickel catalyst : A process for the recovery of both nickel and fat from spent nickel catalyst has been worked out at the National Chemical Laboratory, Poona. The recovered nickel can be re-used either in the form of nickel carbonate or nickel formate, the latter being more efficient. The iron, usually present as an impurity in the spent catalyst, does not affect the activity of the nickel catalyst. Alternatively iron can be removed from the nickel solution as hydroxide, or with the aid of precipitated chalk.

The method consists in the digestion of the spent catalyst with dilute hydrochloric acid. The fat is recovered from

the residue either by hot filter-pressing or solvent extraction. The iron in the acid digest is removed by means of precipitated chalk as carbonate or by ammonia as hydroxide. The carbonate may be converted into the formate and used for the hydrogenation of oils.

D. D. T. Factory in India : It is reported that a joint plan of operation for starting a D. D. T. factory in Delhi has been agreed upon by Government and the WHO (World Health Organization) and the UNICEF (United Nations International Childrens' Emergency Fund).

According to the agreement, 700 tons of D. D. T. are to be produced annually, in the factory to be set up, and the entire production will be devoted to the development and expansion of public health campaigns. Further the WHO will give the technical aid and the UNICEF will supply the plant and equipment. Some of the raw materials like sulphuric acid and chlorine will be got from a Delhi manufacturing firm who will also provide the land, water and electricity. The alcohol required for making chloral will be obtained from another Delhi factory while benzene will be transported from the operating plants in the coal-field areas of West Bengal and Bihar. It is learnt that the building for the factory will be completed by August 1953 and the plant (which is to be imported) erected by Feb. 1954. The factory is expected to go into full production by June 1954. The plant and equipment to be provided by the UNICEF is estimated to cost \$ 250,000 (Rs. 1,125,000) while the technical assistance to be given by WHO is expected to cost a total amount of \$. 100,000 (Rs. 450,000).

The scheme proposed is of interest to all manufacturers of heavy chemicals especially to those producing chlorine. The application of chlorine in other industries being very limited in this country, the manufacture of D. D. T. will provide a useful outlet for the surplus chlorine going to waste, at present. It is hoped that Government will assist chlorine producing industries in starting the manufacture of D. D. T. and other chlorine products.

Calcium carbide : In Talayuthu, Tirunelveli District, a factory for the manufacture of calcium carbide has started operations. The production capacity of the plant is 70 tons.

High calcium limestone, the essential raw material for calcium carbide manufacture, is available in Tinnevely District,

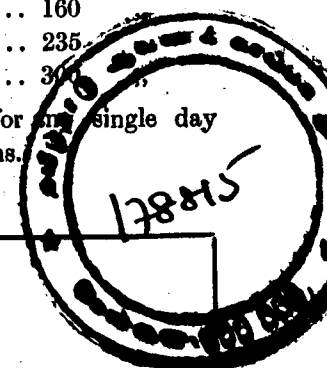
in appreciable quantities. The close proximity of the plant to the sea-coast renders easy the transport of coal by sea from Bengal.

Sindri Fertilizer Factory : Up to the end of May 1952, approximately 32,000 tons of ammonium sulphate valued at above rupees one crore have been produced by the Fertilizer Factory at Sindri.

Ever since the Factory commenced production on October 31, the average daily output for each month has been as follows :—

November 1951	.. 80 tons.
December 1951	.. 160
January 1952	.. 235
February 1952	.. 300

The highest output for any single day so far has been 591 tons.



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METKEM News

Governor's Visit: A distinguished visitor whom we had the honour of welcoming to our works towards the end of June was His Excellency Mr. Sri Prakasa, Governor of Madras. His presence was availed for unveiling the portrait of Sri. N. Gopalaswami Ayyangar, a former Chairman of the Board of Directors of our company, and now Minister for Defence.

An address of welcome was presented to Mr. Sri Prakasa by Mr. Vaidyanatha Iyer, which stated, *inter alia*, that Mr. N. G. Ayyangar, as the Chairman of the Board of Directors of MCIC had brought his high talents, mature experience and rare vision to pilot with distinction the affairs of "this first fully—Indian-owned electrolytic alkali factory in the country."



H. E. Sri Prakasa who unveiled a portrait of Mr. N. Gopalaswami Ayyangar is seen addressing the staff and workers of MCIC.

On arrival, the Governor was received by Mr. S. Vaidyanatha Iyer, present Board Chairman, and Mr. K. K. Raman, Director, Managing Agents.

Unveiling Mr. N. G. Ayyangar's portrait, the Governor paid a tribute to him as a distinguished patriot, who was even to-day serving the nation, despite

his age. He had come to know him intimately in recent years. The first time he met him was, when Mr. Ayyangar was a Member of the Council of States, while he (the Governor) was in the Legislative Assembly at New Delhi. In the years following partition, several momentous conferences were held with a view to bringing peace and understanding between India and Pakistan, and Mr. Ayyangar played a very significant part in them. His patience, industry, and understanding were amazing. As the High Commissioner for India in Pakistan, the Governor had been closely associated with the work of Mr. Ayyangar. In those critical days, Mr. Ayyangar had to perform a delicate task calling for caution and care. It was difficult to ruffle him or make him lose his temper. He met every point, raised by the other side, led by no less a person than Sir Mohamed Zafrullah Khan.

Again, when Mr. Ayyangar was in charge of the Kashmir affairs, Mr. Sri Prakasa said that he had been struck by the justice, friendliness and tact exhibited by Mr. Ayyangar. The friendliness with which Mr. Ayyangar treated Sheikh Abdullah, the present Prime Minister of Kashmir, against whom he had to fight earlier as Dewan of Kashmir, should be a matter of great inspiration, and an example to others. Usually differences of opinion led to personal estrangement. That should be avoided and Mr. Ayyangar had shown them the way by his able handling of the Kashmir problem.

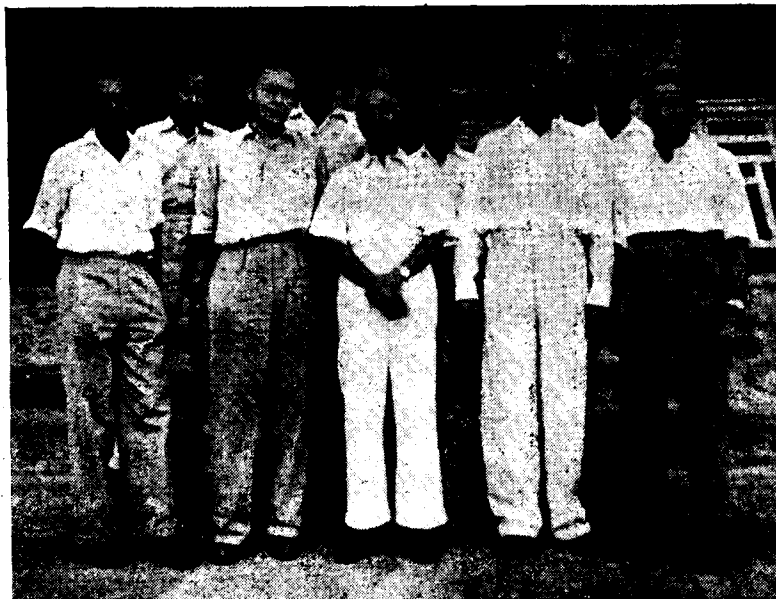
Continuing, the Governor stated that Mr. Ayyangar was noted for his versatility, business acumen, adaptability and adjustability. During the framing of the Constitution—at a committee meeting—Mr. Sri Prakasa, it would appear, had suggested that title-holders under the British rule should never be chosen as Governors of States. Mr. Ayyangar supported the suggestion, though he himself was a title-holder. The Governor had a high regard and admiration for Mr. Ayyangar's ability, integrity and capacity for sustained work. A few months ago, before his own appointment as Governor of Madras, when he had suggested that Mr. Ayyangar should accept it himself had stated that he desired to retire and have rest. But that was not allowed to him for he was appointed Defence Minister. He could handle any port-folio entrusted to him, and the secret of his success lay in his thoroughness in the subject that he had to deal with.

Concluding, the Governor congratulated MCIC on their achievement during the last twelve years.

Commissioning of the Mercury Arc Rectifiers: On July 13, 1952, the two mutators supplied by Messrs. Brown Boveri & Co. Ltd., Switzerland, were switched on by Mr. K. K. Raman. The rectifier units were erected by Messrs. Volkart Bros., through their Engineer, Mr. H. B. Gazdar. The erection work was checked by Mr. H. Blaso of the organization. The "formation" and commissioning of the rectifiers were done by Mr. F. Dingeri, Electrical Expert with

Messrs. Brown Boveri & Co. Mr. S. Ramamurthy, our Electrical Engineer and his men, put in their best efforts in the execution of the entire work—starting from the Power House extension and

The first meeting for the year was held on June 17, when Mr. S. Ramaswamy, Production Superintendent, addressed the Society on "Batch vs. Continuous Processing." The speaker explained that



Mr. K. K. Raman (third from left) formally switched into commission the two mutators supplied by Messrs Brown Boveri.

other alterations necessary for housing the rectifiers, begun in September 1951.

Society of Technologists: The following members were elected to the Managing Committee at a General Body Meeting of the Society of Technologists, held on April 14, 1952.

K. Rajagopal	President.
P. N. Subramaniam	Vice-President.
N. Kalyanam	Joint Secretaries.
and A. Krishnamoorthy	
R. Govinda- raghavan	Committee Members.
T. M. Krishna Rao	
and C.R. Radhakrishnan	

a process could be continuous or batch-wise, depending on factors like the nature of the process, scale or magnitude of operations, degree of skill of the operator, investment involved, space available and quality of the raw materials. He cited examples from our factory for continuous and batch operations and processes and concluded that batch processing was by no means a "back number", although the modern trend was towards large-scale operations with continuous automatic processes.

On July 5, Mr. R. V. Ramani read a paper on "Trends in Design of Evapora-

tors". Some of the types of evaporators with which he dealt, along with details of construction and operation, were the direct-fired evaporators, horizontal and vertical-tube evaporators, basket-type evaporators and forced-circulation evaporators. Two new types—the turbo-film evaporator and the submerged combustion evaporator—were explained in detail.

On July 24, Mr. S. Ramamurthy, read a paper on "Rectification of Alternating currents". Details of the various devices that are in use for converting alternating current and the advantages of each type were explained. He, also, explained the principle behind the arc rectifier and followed it up with a detailed description of the "Brown Boveri Rectifiers" installed in our factory. The full text of this paper is reproduced elsewhere in this issue.

4. *Festival of St. Philomena:* The festival of St. Philomena was celebrated in a grand manner by the Catholics of the Salem camp area. A well-decorated chariot was got up with the efforts of some members of the MCIC and taken in procession to the Salem camp church. Alongside can be seen the photo taken on the occasion.

5. *They were married:* Congratulations and good wishes are due—and hereby rendered—to the following members of our staff who entered the holy state of matrimony.

Mr. R. Srinivasan, Govt. Apprentice with Miss Vedavalli.

Mr. R. Narayanaswamy, Asst. Time keeper, with Miss Sitalakshmi.



St. Philomena Procession.

Mr. M.K. Sundaram, Accounts Clerk with Miss Sundaravalli.

Mr. G. Natarajan, Operator with Miss Saraswati.

Film shows: Pictures screened during July-August included:

Community Workshop, Edith Sampson, Art in Haiti, Library of Congress, Historic Death Valley, Poultry, W. R. Bennett, Women and the Community, Along the lines, Jet getaway, All the King's Men, Factory Inspector, Welded Structures and Rotary Cultivator.



Writer Writ: Congratulations are in order for Mr. R. Parthasarathy, our Editor, for the manner in which he organised the Silver Jubilee Celebrations of the South Madras Electric Supply Corporation, Limited. As he has not fully "recovered" from the celebrations yet—celebrations have a knack of



R. Parthasarathy

leaving not only trailing clouds of glory, but also a lot of unpaid bills behind—this page has been taken over from him for this issue. Incidentally, it gives others an opportunity to write about one who

has so often been writing about others and knock out any hallucinations that he might have about his being the one and only writing man—about Mettur!

A brilliant master of arts in English language and literature, Mr. Parthasarathy graduated to industrial journalism from the ranks of the ordinary press. For several years, he was with the *Hyderabad Bulletin*, Secunderabad, an English daily, and later joined the Hyderabad State Oil Millowners Association, as its Secretary, and editor of its official publication, the *MILLOWNER*.

Joining Seshasayee Bros, Limited, in 1948, Parthasarathy has been in charge of the advertising and publicity work of some of the companies under the management of Seshasayee Bros., Limited. At present he looks after such work of the South Madras Electric Supply Corporation, Limited, the Mettur Chemical and Industrial Corporation, Limited, and the Aluminium Industries, Limited, Kundara. He is also the editor of the three house

magazines published by these three companies, *ELECTOLITE*, *METKEM* and *ALIND CHRONICLE*.

Back in July 1952, when he came out with the first issue of *ALIND CHRONICLE*, the *B.A.I.E. BULLETIN*, London, the journal of the British Association of Industrial Editors wrote:

"This is one of the best produced house journals we have seen from India. Contents, layout and artwork reach a very high standard and Mr. R. Parthasarathy is to be congratulated on the outstanding job he has produced. He is also the editor of two other Indian house journals *ELECTOLITE* and *METKEM*."

Of special interest to readers of *METKEM* is the following piece which appeared in the August issue of *PUBLIC RELATIONS JOURNAL* of the Public Relations Society of America, New York:

"Back in August of last year you very kindly lent your assistance to Mr. Howard Needham, Vice Consul at Madras, India. I thought you might be interested in this portion of a letter I just received from him.

'You will recall Mr. Parthasarathy, Public Relations Director for the South Madras Electric Supply Corporation, whom you helped to get in touch with the Public Relations Society of America and other groups. I am enclosing a recent issue of his employee relations house magazine, *METKEM*.

I am really impressed with Mr. Parthasarathy's work. Even in America, too many of these magazines sacrifice all

objectivity for the attainment of the employee's approval—even at the expense of dignity and common sense.

One might expect that out here, with employee relations programs only in their embryonic stage, that these questionable practices would be even more prevalent. And to tell the truth they do exist, but Parthasarathy's magazines lead the field, and I think justify their position. Parthasarathy is even more alone with respect to support and precedent for his work than is the average US public relations man in his attempt to train a client in PR thinking'."

Vice President,
National Surety Corp. } N. J. L. PIEPER,
New York.

Master of a lucid and compact prose style, Parthasarathy draws from the pure wells of English undefiled, and then sort of streamlines his language. He is the author of such deathless (head-) lines as *Bar Excellence* for our Cauvery Bar Soap *Extremely Sandal-ous*, for Mettur Sandal Soap and *Maiden Oven*, for Kamadhenu Vanaspati.

Power-ful personality: In an electro-chemical works, such as ours, electricity is, of course, of paramount importance. Taking good care of all available electric power and distributing it properly to the various departments are the special responsibilities of Mr. S. Ramamurthy, our Electrical Engineer—whom we have pleasure in presenting to you in this issue. Topical relevance is lent to the presentation ceremony by reason of the notable part he played in the erection of our

Mercury Arc Rectifiers, which came off recently. He was of invaluable assistance to the experts deputed by Messrs. Brown Boveri & Co., Limited, and Messrs. Volkart Bros.

A.B.E. of the Madras University Ramamurthy also holds a diploma of the Institution of Electrical Engineers (London)—Grad. I. E. E. Upon graduation, he joined the South Madras Electric Supply Corporation, Limited, Tiruchirappalli, as a Supervisor, and by sheer dint of merit, rose to the position of a Resident Engineer. He took service with MCIC in the year 1947, and has been with the company, ever since. In all the electrical connections to the various pieces of equipment on our plant, you can distinctly recognise the hand of Ramamurthy.

Ramamurthy is also in charge of our Film Section.

"*Busy Bee*": A worthy assistant to Mr. Ramamurthy is Mr. C. R. Radhakrishnan, our Junior Engineer (Electrical).



S. Ramamurthy and C. R. Radhakrishnan

He too has had a "hand" in the installation of the Rectifiers. In putting up the Vanaspati plants at Mettur and

at Tiruchi, Radhakrishnan gave of his very best. A sincere and hard-working



R. S. Srinivasan

type, doing work for the sheer fun of it, Radhakrishnan is positively infectious in his enthusiasm.

It is worth recounting in these columns that Radhakrishnan recently passed creditably the examination in Direct Currents (Inter Grade) of the City and Guilds (London) Institute.

An adept at repairing clocks, pens, musical instruments, telephone sets and a hundred other odd things, Radhakrishnan's services are frequently in demand in the colony. He is, also, a philatelist, and an apiarian, possibly the only one in our midst. Now you know on whom he models himself!

Back to the fold: We are glad to welcome back to MCIC Mr. R.S. Srinivasan, Sales Manager of the Allied Industrial Distributors, Limited, Madras, sole selling agents for our chemicals.

A double graduate (B. A. B. L.), Mr. Srinivasan joined us in September 1942, and left us on transfer to Madras, in November 1950.

Impressive in personality and forceful in approach, he is the very embodiment of politeness.

We have learnt with great interest that Mr. Srinivasan now practises *Yoga Asanas*.

"*Physician, heal thyself*": While on the subject of magnetic sales personalities, we must introduce to you Mr. R. K. Viswanathan, our other Sales Manager. It is he who puts across to you Kamadhenu Vanaspati, Cauvery Bar Soap, Rup and Mettur Sandal Soaps.

Mr. Viswanathan's selling abilities were sufficiently well-pronounced even when he was the Secretary of our Employees' Co-operative Stores in the years 1943-50. Example: At a dinner party he told our doctor that if he was serious about putting on weight, dinners would not help—he



R. K. Viswanathan

should treat himself to a course of tonics and vitamin tablets!

Our doctor was not sure that the advice was proffered in a completely altruistic spirit. He suspected that Viswanathan had up his counters some unsold stocks of medicine. The doctor was not wrong!

"*Buy Guy*": From seller to buyer is not a far cry. And the buyer whom we

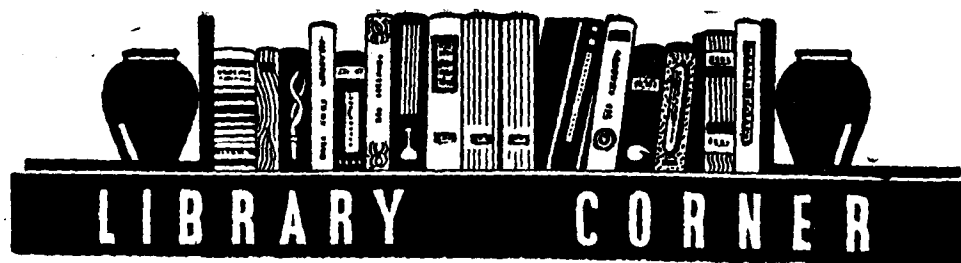


N. Srinivasan

would like you to meet now is Mr. N. Srinivasan, operator. One of the elected directors of our Co-operative Stores, Srinivasan has sublimated into perfect art the technique of buying the best articles at the most reasonable prices.

Thoroughly versatile, Srinivasan can do a number of jobs, and very well, too. He can operate the rotary kiln, look after the brine section, attend to the electrolyzers, maintain the maintenance cards, allocate work to men in the C. F. M. G. and even drive auto-trucks! More power to his elbow!

—C. S. S.



PAPER MAKING: Published by the Technical Section of the British Paper and Board Makers' Association, Surrey, England. (Price 10 sh).

THIS book has been published by the Technical Section of the Paper Makers' Association of Great Britain and Ireland in fulfilment of the recommendation of the sub-committee to produce text-books on paper at a relatively low selling price, and is intended for the younger members of the industry. Naturally, therefore, the book is elementary, but still it covers all important aspects of paper manufacture.

Paper is one of the most widely-used articles of daily life. But still, not many, perhaps, know the various processes involved in the manufacture of paper.

The origin of paper making is somewhat obscure, but it certainly occurred in China, about the beginning of the first century. Gradually, it spread to western countries, and by about 1270 A. D. the Italian Mills made two valuable contributions to paper making—namely, the use of glue for the tub-sizing of paper and the introduction of water-marking.

In England, paper making started in Hertfordshire, in 1498.

The publication first deals with the structure, mechanical and optical properties, and the nature and uses of various types of paper, like the writing paper, printing and wrapping papers. It then proceeds to expatiate upon the quality of the raw materials and the properties of the fibrous materials of paper making. Various pulping methods are discussed in later chapters.

The book then deals with the bleaching process. Bleaching of the pulp is an important step in paper manufacture. Bleaching methods using calcium hypochlorite liquor are discussed in detail, while but a cursory mention is made of the uses of chlorine dioxide and chlorites.

Beating the pulp can, indeed, be regarded as the first important step in paper making. The quality and the characteristics of the finished paper depend to a large extent on beating. The nature of the pulp and the paper to be made are the governing factors for the

beating operation. The auxiliary operations in the beater-house, like the addition of special chemical filling agents and dyes, are discussed in Chapter VIII. Alum and rosin are used for sizing, starch is used to give firmness, stiffness and strength to the paper, and kaolin is generally used as a filler.

Chapters IX and X deal with actual paper making operations. The method of making hand-made paper for which, according to the book, there is always a limited demand, is fully described. For machine-made paper, the pulp flows in a regular stream over an endless wire-mesh. The water is sucked out by vacuum. The different parts of the machine, like the "breast-box" which evens out the pulp-flow, of vacuum-boxes, the couch and press section are all explained in Chapter IX. Chapter X deals with the drying of paper which is achieved by passing the wet paper over steam-heated drying cylinders. After cooling, the paper is rolled up in wooden or steel tubes. The running of the paper machine right from adjusting the pulp-flow to drying is, also, discussed, in great detail, and a few pages are devoted to the manufacture of boards.

Chapter XI describes the finishing of the paper which involves calendering, glazing, creping, slitting, cutting, etc.

The importance of a laboratory to paper mills is brought out in the last chapter.

Informative—indeed, very informative—as the publication is, its value would further have been enhanced by a discussion of paper-making methods in other countries. One probable reason for this omission may be the restricted terms of reference of the authors—commissioned as they were to produce a book under the auspices of the British Paper and Board Makers' Association.

—N. KALYANAM.

OUTPUT: Times of India Publication, P. O. Box 213 BOMBAY Re. 1

The August–October issue of OUTPUT is up to the usual high standards of a "Times" publication, both in matter and manner. Of special interest to the chemical industry is the article that the current issue carries on "Indigenous Manufacture of Chemicals." Despite several bottlenecks, the Indian Chemical Industry has, during World War II, made notable progress. But, as the article rightly concludes, if it is to play its proper role in the improvement of the country's economy, both the industry and Government must co-operate and evolve a suitable plan for future development

—R. P.

Sportfolio

Cricket: THE annual general body meeting of the Cricket Club was held on June 28, when the following office-bearers were elected for the 1952-53 season, without much of the usual ado.

Captain: T. D. Krishnaswamy
Vice-Captain: S. Ramaswamy
Committee: P. B. Srirangan
 R. Natarajan
 R. G. Raghavan
Net-Secretary: T. G. Rangan.



T. D. Krishnaswami, Captain.

Regular practice for the season commenced on July 1, 1952, and possibly, stung by the remarks made in these columns in our last issue about the dim future of cricket at Mettur, members, old and new, are rushing in such large numbers that the Net-Secretary is having a pretty

tough time of it. He has to give players batting and bowling practice by turns. Of



S. Ramaswamy, Vice-Captain.

course, nobody demands fielding practice, the unpleasantest part of an otherwise enjoyable game.

Badminton: Our team participated in the Shivaji Presidency Badminton Fives Tournament, Salem, conducted by the Motilal Club, in May 1952. We made short work of the Kaveripatnam Friends in the first round in two straight games (29-15, 29-12), but had to go down fighting in the next round to the Friends Fives, Pattukottai, (15-29, 15-29) a premier team in the South. Our team consisted of S. Sambandam, P. R. Srirangan, K. Rethinam, K. Sampath and R. Krishnamurthi.

(Is there no way of by-passing these preliminary rounds and reaching the ever-eluding finals, some of us often wonder?)

Practice games are now-a-days played on Sundays only. The captain has tailor-made excuses in wind and weather being unfavourable, on other days!

Table Tennis: The Staff Association Committee has been forced to close down the morning session of this game as "the breakage of balls is alarmingly high." The players did not, for a moment, dream that the committee would get panicky over such a trifling thing as a few broken balls. They have seen others remaining imperturbable...over broken hearts!

At least to satisfy the committee, here is wishing our enthusiastic players less power to their elbows!

Volleyball: Going strong as ever. But serious play and regular fun start only

after our captain comes back after his cricket practice.

Tennis: The entry of new members has forced our veterans to return to the game, their hibernation episode having probably come to a close.

Another Wimbledon has come and gone, but where are our Sedgmans and Drobnys?

Caroms and Chess: Our teen-agers are now vigorously at these games. Although this passion for indoor games furnishes a sad commentary on the rising generation, the fact remains that the older you become, the fonder you become of outdoor sport.

Tennikoit: Alas, this game has now been deserted by our top-flight stars, but still it is kept going—thanks to the ardour of our second string.

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மெட்கெம்பத்திரிகை.

1. என்னைக் கேட்டால் ?

“ஹெல்பர்”

என்னமோ போங்க சாமி, என் கதையை பிளாண்டிலேயும் எண்ணையை ஊத்த ஆரம் என் கேக்கிறீங்க? எங்களுக்குத் தெரியாதது பித்திறது நாங்க தானுங்களே. என்ன இருக்குது அதிலே?

பேரு என்னமோ ஹெல்பரு (Helper)ன்னு சொல்லுங்க. தொரை பாஷையிலே அது க்கு உதவியான் இன்னு அருத்தமாங்க. அது ரொம்ப ரிசம்தான். நாங்க இந்த தொழிற் சாலை உற்பத்தியிலே செய்யற ஒத்தாசையை எல்லோரும் ஒப்புக்கொள்வேண்டியது தானே?

க்ளோரின், காஸ்டிக் செய்ய ஆரம்பித்திற இடம் சால்ட் ரூம் தானே! அதிலேயும் முதல் வேலை உப்பு மூட்டை போடறது. நாங்க மூட்டைடைப் பிரிச்சு உப்பைக் கொட்டினா தான் வேலை ஆரம்பிக்குது. இல்லையா? சால்ட் ரூமிலே வேலை இருக்குன்னாலே சீயப் எம்ஜி (CFMG) என்ஜினீருக்கு 2 ஆன் வேணு மின்னு முன்னாலேயே கடுதாசி கொடுத்தி டருங்களே—பெரிய கெமிஸ்ட்ரிக்?

ரோடரியைத் தான் எடுத்துக்கிடுங்கோ! முதல்வே கல்லை ஒடைக்கிறது நாங்கதான். சோப் பிளாண்டிலேயும் வனஸ்பதி நெய்



“உப்பைக் கொட்டின வேலை ஆரம்பிக்குது”

அதே போல உற்பத்தி ஆகிற சாமான்களை எல்லாம் மின்னிலேயும், டிரம்மிலேயும், ஜாடியிலேயும் பிடிக்கிறதும் நாங்க தான்.

இதைத் தவிர கலெக்டரு வராரு, மந்திரி வராரு, கவர்னர் வராரு என்று சொன்ன வேலை செய்யற இடத்தை எல்லாம் துப்புற வைச்சுடறது நாங்கதான்.

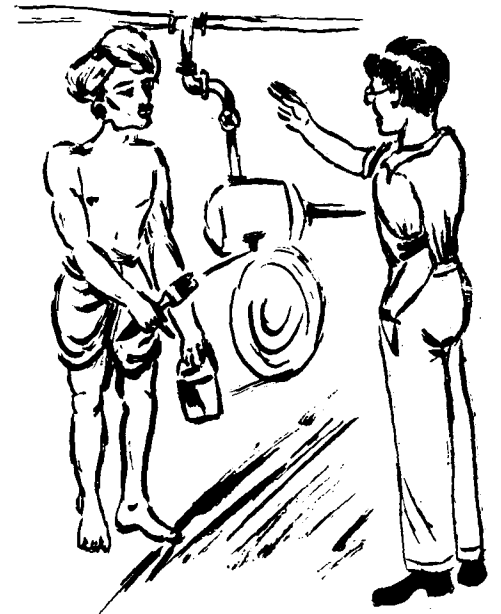
இதைத் தவிர, செக்ஷன்களிலே ஓடும் மெஷின்கள், பம்புகள், மற்ற வேலைகள் எல் லாத்தையும் பாத்துகிடறோம். ஆபரேட் டருங்களுக்குத் தான் அந்த வேலை இன்னா லும், நாங்க சுமமா இருக்க மனசு கேக்குதா? செக்ஷனிலே ஆபரேட்டர் ஒண்டி ஆன் நாங்க நாலு, அஞ்சுபேர் இருக்கிறோம். எங்க பேருக்கு ஒத்தாப் போலே அவங்க வேலை யிலே நாங்க ஒத்தாசை செய்யவேண்டியது தானே நியாயமுங்க?

இருந்தாலும் சில சமயத்திலே ஆபரேட்ட ரோ, கெமிஸ்டரோ ‘எண்டா முத்து அதைச் செய்யல்லே; எண்டா சடையா இப்படி செஞ்சிட்டியே’ என்னு எங்களைக் கோவிச் சுக்கிறாங்க. கண்டிக்கவும் செய்யுறாங்க. ஏதோ தவறு இப்படி வரத்தான் செய்யும். திரும்ப அப்படி நடக்காமே சாக்கிரதையா யிருப்போம். ஆனா, கொஞ்சம் கோவமா வார்த்தையைச் சொல்லிட்டா, மனசுக்கு கஷ்டமாதானிருக்குது. நல்ல மாட்டுக்கு ஒரு குடு போறதுங்களா? எப்படியும் நாங்க சொன்ன வேலையை பொறுமையா செய்ய றோம்.

வேலை என்னமோ சரியா வாங்கிடறாங்க இந்த ஆபரேட்டருங்க! கொஞ்ச நேரம் சுமமா இருந்தா “பைப்புக்கு பெயிண்ட் அடி”; “அந்த இடத்தைக் கிளின் பண்ணு” என்று உத்தரவு போடுறாங்க.

ஏதாவது ஒரு நோம்பு, இல்லை, ஒரு சீக்கு அப்ப டின்னு லீவு போட்டா கிடைக்குதுங்க.

ஆனா மாதேசுவரமலை, திருச்செங்கோடு அப் படி இப்படின்னு விசேஷம் வரும்போது எல்லாருக்கும் போக இஷ்டம் தான். ஆனல் எல்லோருக்கும் எப்படி லீவு கிடைக்கும்? லீவு போட்டா பதில் ஆன் சீயப். எம்ஜியிலே ருந்து வரவேண்டாமா?



“பைப்புக்குப் பெயிண்ட் அடி”

லீவு கடிதாசி சரியா எழுதத் தெரியல் லென்னு சில சமயம் பரிசாசம் செய்யுறாங்க! எங்க செங்கோடன் ஒரு சமயம் ‘மகாராச ராச ஸ்ரீ கெமிஸ்டர் அவர்களுக்கு தயவு பண்ணி 2 நாள் லீவு கொடுங்க’ன்னு எழுதின தைச் சொல்லி ரொம்ப பேர் சிரிக்கிறாங்க. எங்கனலே பலருக்கு சரியா எழுதப்படிக்கத் தெரியாததுதான் இதுக்குக் காரணங்க.

எங்கனலே கொஞ்சம் பேரு சான்ஸ் வரும் போது அட்டண்டர், ஆபரேட்டர்கூட ஆயிருக் காங்க அப்படி செஞ்சதனாலே தான் நல்லா

ஊக்கமா வேலை செய்வவர்களுக்கு இதைப் போலே மேல் வேலை கிடைக்குமின்னு நம்பிக் கை வருது.

காண்டனிலிருந்து டி வருது பார்த்தீங் களா? அதுதான் எங்களுக்கு ரொம்பப் பிடிச்ச ரேம். அஞ்சு ரிமிசம் ஜூடான டியை ருசிச்ச குடிச்சு, வெத்திலை பொயிலை போட்டுகிட்டா



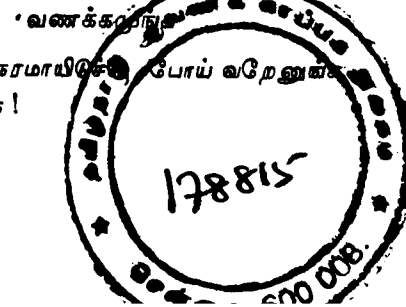
“ அஞ்சு ரிமிசம் ஜூடான டியை ருசிச்ச குடிச்சு ”

ஒரு தனி சுறுசுறுப்பு தானுங்க தோணுது. கைட் ஷிப்டிலே இரண்டு தடவை டி கொடுக்க ருங்க! ஆனா இரண்டாவது டி சில சமயம் நல்லா இருக்கிறதில்லைங்க. காண்டனிலே வடை, மிக்சர் எல்லாம் போடறாங்களே, ஏன், ரெயில் டேசனிலே விக்கிறாப்பலே சாம்பார் சாதம் தயிர் சாதம் செஞ்சு கொடுக்கப்படாது? அது தான் மகராசன் ராசாசி வந்து பாழாப்போன ரேஷனைக் கூட எடுத்திட்டாரே!

சினிமா கூட அடிக்கடி காமிக்காங்க தொழிலாளிகளுக்கு? ஆனல் எல்லாம்

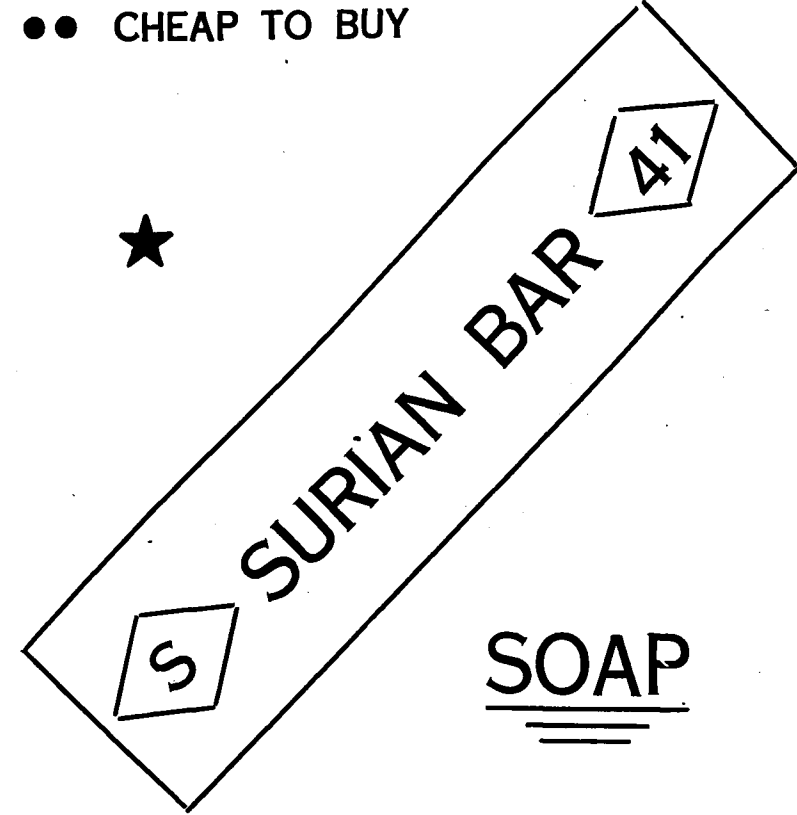
இங்கிலீசு; எங்களுக்கு என்னுங்க தெரியுது. தமிழிலே ஒண்ணு, ரெண்டு செய்திப் படம் தான் வருது. அடிக்கடி தமிழ் படம் வந் தால் எங்களுக்கு நல்லா இருக்கும்.

விலைவாசியெல்லாம் ஏறிக்கிட்டே போகுதா, வரவுக்குமேல் செலவாகுதுங்க. சொஸைட் டியிலே அட்வான்ஸ், பிராவிடண்ட் பண்ட் மேலே கடன் எல்லா வாங்க வேண்டியிருக் குது. இதுக்கு வளியே வராதா என்று கூடத் தோணுது; என்னமோ சாமியை நம்பி, பல்லைக் கடிச்சுக்கிட்டு நடத்திகிட்டிப் போறோம். சொன்ன வேலை உண்டு, நாங்க உண்டு. முடிஞ்சு போதெல்லாம் எங்களை கொஞ்சம் கவனிச்சுக்குங்க. பெரிய விஷயங்களை எடுத்து மீட்டிங்குகளிலே நீங்க அதிகாரிங்க கிட்ட பேசறபோது எங்களை மறந்துடாதீங்க.



சரிங்க, நேரமாயிடுச்சு போய் வறேனுங்க வணக்கமுங்க!

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