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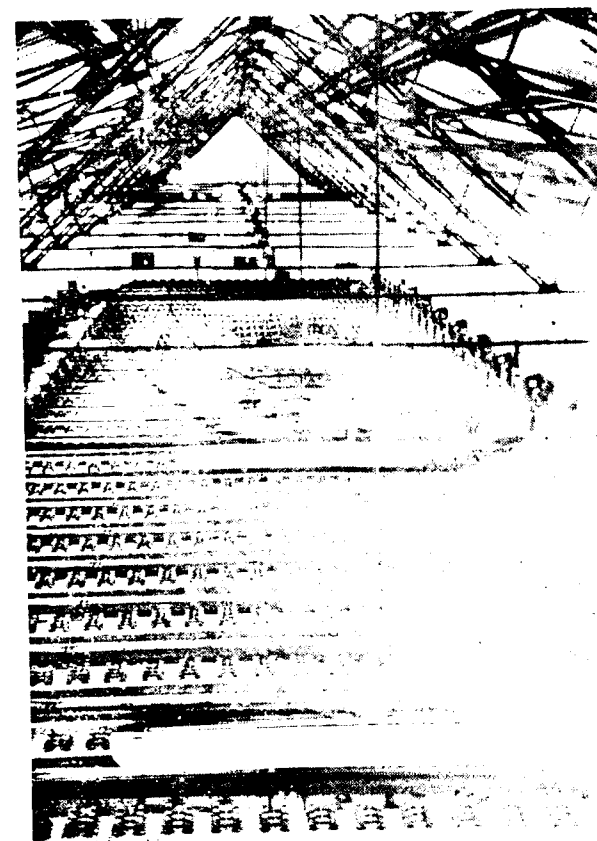
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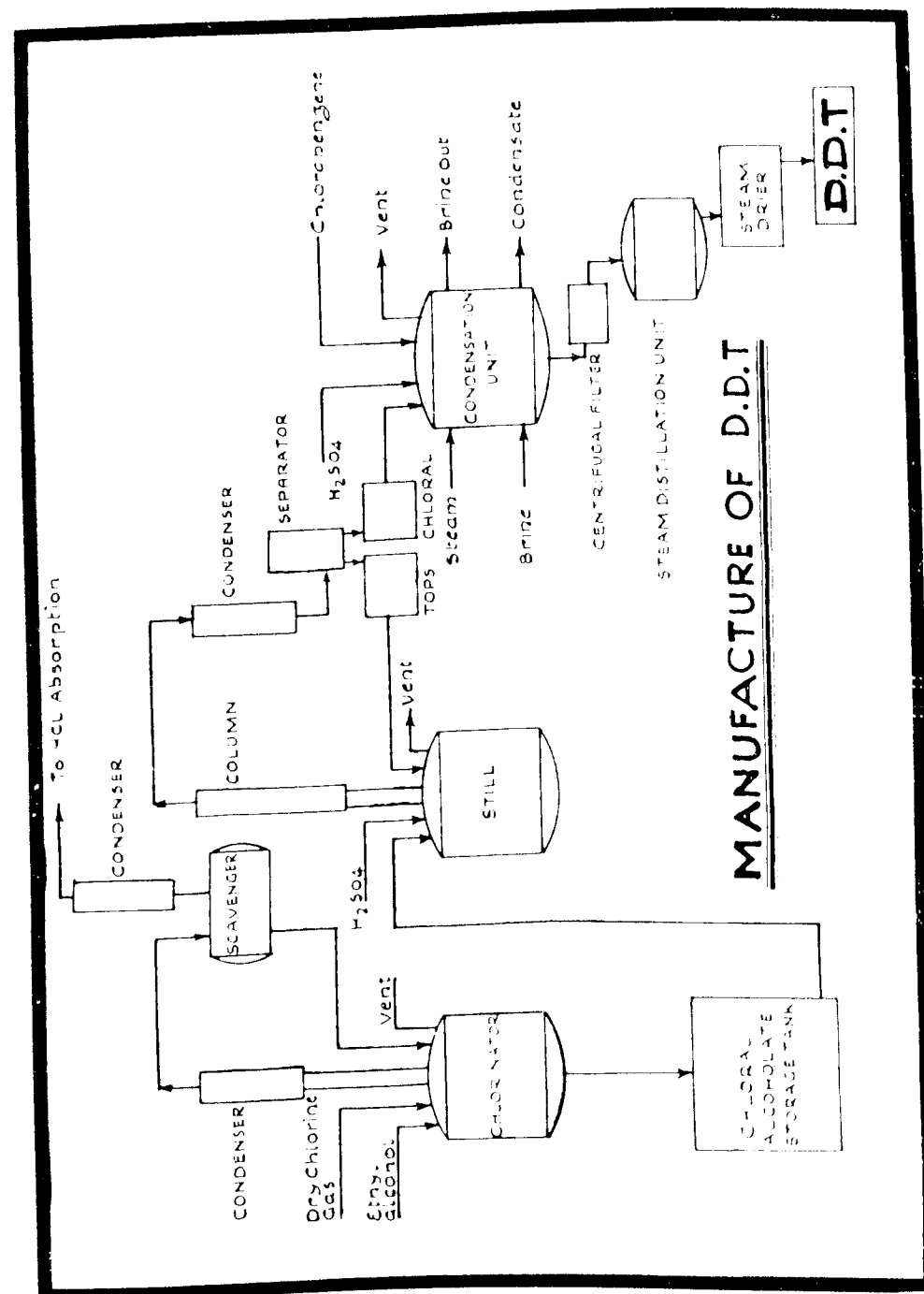
In this issue:

Manufacture of DDT

Export to India & Commerce

Other Usual Features





VIEW OF PLANT AT PUNE

LIGHTER and

STRONGER

Aluminium Cable Type Buntford - A D.S.R. is 29 per cent lighter than the corresponding copper one.

For instance, our 100 lb. cable weighs 71 lb. against 20.3 lb. for a cable of the same length of copper.

It is 50 per cent stronger than steel or stranded steel of the same diameter and strand.

When you need more cable, you can get it from International Aluminium Cable Co. Ltd. or from your local conductor cable manufacturer.

POWER CABLES LTD. 1950

This

ALUMINIUM INDUSTRIES LIMITED.

Kundara Travancore India

Manufactured by: SECHASAYEE BROS. TRAV. LTD.

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SURIAN BAR

47

SOAP

KUMARAN SOAP WORKS, ERODE.

COIMBATORE

KARUR

TRICHY

268. Big Barrel.

Editorial Comment

THE JOURNAL OF THE ROYAL ANTHROPOLOGICAL INSTITUTE

M I T M

J. J. KENNEDY, JR., *Editor*
JAMES E. HILL, *Editor*

SCIENCE AND MORALITY

Because science gives us knowledge that is power, and that power can be abused, it is absurd to suggest that we cry "halt" to all scientific progress or put a moratorium on it until our morals catch

the same time, the authors also argue and represent that the same conditions produce different potentials for different countries, based on their history, geography, and culture. It is thus a living, breathing, and dynamic model.

turn the atom to benevolent or malevolent uses.

Prof. Hill summed it up all admirably when he concluded: "It is true that scientific research

has opened up the possibility of unprecedented good or unlimited harm for mankind; but the use that is made of it depends in the end on the moral judgments of the whole community of men."

By the Way —

World Oil Production in 1952 : World crude oil production in 1952 increased by 5 per cent, or about 31 million metric tons, reaching a new record of 618 million tons, compared with 587 million tons in 1951. The climb continued throughout the year, notwithstanding fluctuations in various countries. About 302 million tons were produced in January-June and 316 million in July-December. The rate of production, which early in 1952 was only equivalent to about 600 million tons a year, reached nearly 640 million tons towards the end of the year. The free world's production rose from 537.1

to 562.9 million tons, or by 4.9 per cent and accounted for five-sixth of the world increase; the Communist countries' output rose by over 5 million tons to 55.3 million tons.

* * * *

"All the Perfumes of Arabia": If their choice in toilet soaps is anything to judge by, the English now are a nation of healthy, clean-limbed extroverts, according to an article in the latest issue of *Vickers Overseas News*. Before the war, they were all for heavy, exotic, flower-smelling soaps. The trend to-day, it would appear, is in favour of fresh outdoor smells.

Manufacture of DDT^{*}



N. Sundaresan

importance of the use of insecticides in combating insect pests is rightly being emphasized in recent years.

CLASSIFICATION

Insecticides may be classed in a number of ways according to one's likes—synthetic organic, natural organic, and inorganic.

N. SUNDARESAN, B. Sc.

But a better classification would, probably, be according to the mode of application as (1) contact poisons, (2) stomach poisons, and (3) fumigants, since this classification will indicate in a general way as to how the material should be used and how they act.

1. Contact Poisons :

These insecticides are poisons to the insect in the sense that they kill by direct contact with the insect. Examples are nicotine, pyrethrum and D. D. T.

2. Stomach Poisons :

These act after they have been ingested by the organism. They are absorbed internally. These are useful in affording protection to crops and they are applied before the appearance of the insects. Lead arsenite and Paris Green are stomach poisons.

AN insecticide may be defined as a substance which destroys insects

With the growing insect pests that we find in many parts of the country, the necessity for using insecticides is today being keenly felt. Commercial production of agricultural crops would be difficult without the use of insecticides. The havoc caused by insects does not confine itself to agricultural crops only. Repulsive insects, bugs, mosquitoes, lice, cockroaches, etc., invade our houses causing personal discomfort and damage to stored foods, fabrics, vegetables, etc., much to our annoyance. Further, we are often victims of insect-borne diseases like malaria, yellow fever, typhus, etc. With the development of applied research the

* Being a paper read before the Society of Technologists on December 12, 1952.

3. Fumigants :

Fumigants cover all compounds which destroy insects through action in the gaseous phase. They may be solid, liquid or gas. But to be classified under this head they must be readily volatile. (Examples are : methyl chloride, carbon disulphide, para-dichlorobenzene). This is only a broad classification, but by no means, precise. Nicotine is normally used as a contact poison. It is also sometimes used as a stomach poison and occasionally as a fumigant.

Among synthetic insecticides may be mentioned benzene hexachloride (Gammexane 666), D.D.T. and D.D.D. Gammexane was first synthesised in 1825 by Faraday. Its insecticidal properties were not discovered until 1942. It is obtained by chlorinating benzene in the presence of light. Sixteen isomers are possible for this compound and five of them have been isolated—namely, alpha, beta, gamma, delta and eta forms. The y-form is markedly toxic to insects in concentrations of 10 to 15 per cent. Gammexane can also be applied to non-food crops. Highly purified y-isomer contains 99 per cent (lindane). Gammexane is being produced and marketed by I. C. I.

The production of synthetic insecticides is of recent origin. There are a number of such insecticides put on the market, but my effort here is confined to dealing with the most popular insecticide in some detail—namely, D. D. T.

HISTORY

Though the preparation of D.D.T. was reported as early as 1874 its insecticidal properties were, however, not recognized until 1939. In that year, a group of scientists working in Swiss laboratories discovered the insecticidal property of D. D. T. The dissemination of this information was restricted owing to difficulties of communication created by war. In the early days before D. D. T. came into the field, insect pests were controlled by natural organic products like pyrethrum. The pyrethrum extract was applied in the form of a solution and sprayed with sesame oil and F (dichlorodifluoro methane. (2 per cent, 8 per cent and 98 per cent.) In course of time, the available sources of pyrethrum got exhausted. Subsequently when the beneficial results of the application of D. D. T. became known, they gave a tremendous fillip to intensive research, and large-scale production in the U. S. started in 1943. The following table shows the approximate production.

Year	Production In million lbs.
1943	4
1944	15
1945	32
1946	45
1947	50
1948	20
1949	18
1950	60

GRADES

The term D. D. T. does not define the precise nature of the composition of the product. It is rather a loose expression. It has been used to describe para-para dichloro-diphenyl-trichlor ethane, which is a whitish, crystalline, odourless powder, melting approximately at 108 deg. C. But the commercial variety of this product contains not only this compound, but also its isomers together with dichloro-diphenyl, dichlor ethane known empirically as D. D. D. This D. D. D. itself contains a mixture of isomers. Commercially produced D. D. T. may be classified into three categories.

- (1) Technical grade containing upwards of 70 per cent of para-para isomer. (m.p. 90 deg. C.)
- (2) Aerosol grade which is partially refined from technical grade containing more than 90 per cent of the para-para isomer. Its m. p. should not be less than 103 deg. C.
- (3) Chemically pure grade (m. p. 108.5 to 109 deg. C.)

PROCESS

The raw materials required for the manufacture of D. D. T. are alcohol, benzene, sulphuric acid and chlorine. There are several commercial processes for the production of D. D. T. They vary in details, but the usual method is the condensation of chloral with chlorobenzene. The whole process for the manufacture may conveniently be divided into three parts :

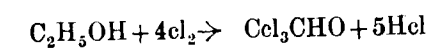
1. Synthesis of chloral,

2. Manufacture of chlorobenzene, and
3. Synthesis of D. D. T.

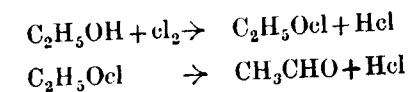
Chloral Synthesis :

Alcohol is chlorinated to produce chloral alcoholate which is decomposed by sulphuric acid to chloral.

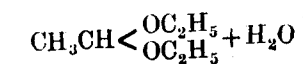
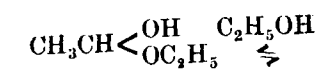
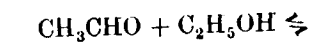
The reaction between chlorine and ethyl alcohol results in the oxidation of ethyl alcohol to acetaldehyde and chlorination of the methyl group. The mechanism of the chlorination reaction is somewhat complicated and several intermediate compounds are formed. The reaction cannot, therefore, be merely indicated by the equation.



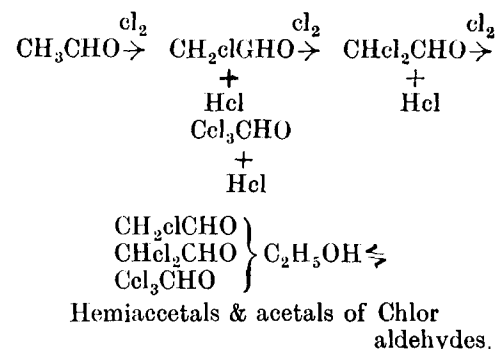
It has been reported that during chlorination there is an initial formation of ethyl hypochlorite which is explosive and the reaction is highly exothermic. To guard against this hazard, a temperature of 50/60 deg. C. has been found to be suitable at which the ethyl hypochlorite progressively decomposes into acetaldehyde.



The aldehyde formed reacts with the alcohol to form the hemiacetal and acetal.



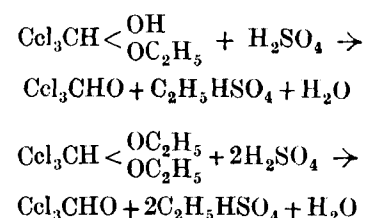
Further, the aldehyde lends itself to chlorination by which it is progressively converted into mono, di, and trichloroacetaldehydes and each of these substituted aldehydes reacts with alcohol to form its own hemiacetals and acetals.



The chlorine gas passes through a pre-heater, evaporator and rotometer before entering the chlorinator. Alcohol is metered out to the chlorinator. The chlorination temperature is controlled in accordance with a time-temperature schedule by admitting hot or cold water through the jacket. Some of the reaction products and alcohol go to a scavenger that recovers alcohol, vents the small amount of ethyl chloride and separates out the hydrochloric acid for absorption. The liquor resulting from chlorination includes chloral, its hemiacetal, and acetal derivatives as the main components of the mixture and halogenated hydrocarbons (ethylidene dichloride). Ethyl chloride in nearly whole bulk passes off with hydrochloric acid. Some of the chloral is present as chloral hydrate. The chloral alcoholate product is taken to a storage tank from where it is pumped when required through a measuring

tank to a still. It is distilled with 98 per cent sulphuric acid which causes decomposition into chloral and alcohol.

The sulphuric acid serves two purposes—namely, (1) it frees chlorinated liquor from dissolved hydrochloric acid which otherwise complicates distillation, and (2) it decomposes hemiacetal and acetal derivatives of chloral.



It would be inadvisable to allow the temperature to go above 125 deg. C. for hastening the reaction, in which case, undesirable decomposition products would be formed.

The separation of chloral from acidulated liquor is done in two stages—namely, isolation of what are called “low-boilers” (ether, ethylidene dichloride, monochloroacetaldehyde and dichloroacetaldehyde) and isolation of chloral from undecomposed trichloroacetal. The first distillation is done under atmospheric conditions and the second distillation under vacuum in order to reduce the molecular fraction of chloral in the bottoms. If the latter distillation is done under atmospheric pressure, a high temperature will be required to expel the chloral from the bottoms. The final product consists of technical grade chloral containing not more than 3 per cent by weight of dichloroacetaldehyde. An

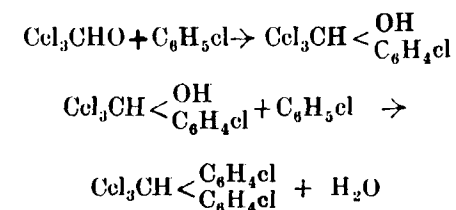
increasing amount of dichloroacetaldehyde impairs the insecticidal value of D. D. T. However, it may be mentioned that the condensation product between dichloroacetaldehyde and chlorobenzene does have some insecticidal value. Alcohol of 90 to 95 percent is used and the yield is of the order of 60 per cent.

Manufacture of Chlorobenzene:

Chlorobenzene is produced in a separate unit by chlorinating benzene under controlled temperature conditions.

Synthesis of D. D. T.

The chloral is now charged with chlorobenzene and sulphuric acid into an acid-proof reactor. 123.6 per cent excess of chlorobenzene is used with respect to the theoretical requirements based on the amount of chloral used. The reaction temperature has got to be maintained around 15 deg. C. because sulphonation of chlorobenzene and D. D. T. may take place. If the sulphonation reaction is minimised, a greater yield of D. D. T. will be obtained. The synthesis of D. D. T. is a two-step reaction involving 2 mols. of chlorobenzene and 1 mol. of chloral.



The first reaction is analogous to the formation of acetals from alcohols and aldehydes. The temperature and concentration of sulphuric acid in which chloro

benzene is dispersed as an immiscible phase exert an influence on the course of the reaction. Research work on the use of different concentrations of sulphuric acid in the condensation reaction has indicated that 98 to 99 per cent sulphuric acid secures the best yield under the given conditions. Starting with a concentration of 95 per cent, the yield of D. D. T. increases and reaches a maximum at a concentration of 98.5 per cent (approximately) and thereafter decreases at higher concentrations.

Further the reaction velocity is increased with rise in temperature. But the influence of temperature on the rate of sulphonation of chlorobenzene is much more pronounced than is the influence of concentration of sulphuric acid between the limits of concentrations 90/100 per cent. Hence an optimum temperature of 15 deg. C. is maintained during the reaction. However the use of excessively low temperatures results in prolonged exposure of chloral to sulphuric acid, resulting in the polymerisation of chloral.

The addition of excess of chlorobenzene is to provide the greatest possible driving force for the reaction as well as for an easily agitated reaction mass. Sulphuric acid with a concentration of 98 per cent is preferred because of its high dehydrating ability. In the course of the reaction a state involving a change from D. D. T. in solution in chloral and chlorobenzene to a solution of chloral and chlorobenzene in D. D. T. is achieved. Once this change is brought about, polymerisation and sulphonation are inhibited.

Uniform rate of addition of sulphuric acid is necessary for effective condensation.

Brine and steam coils fitted to the reactor control the temperature around 15 deg C. The reaction takes five to six hours when the spent acid separates out.

PURIFICATION OF CRUDE D. D. T.

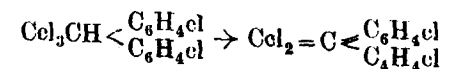
The crude D. D. T. formed is separated by passing the acid stream through a centrifugal filter. The centrifugal filter is provided with means of admitting water at controlled temperature to remove the acid contaminating the surface of D. D. T. Further, the wash removes the para-chloro-phenyl sulphuric acid and sulphonated D. D. T. and mechanically entrained acid catalyst from crude D. D. T. particles.

The second step in purification is to subject the D. D. T. to a soda ash washing operation. This is intended to remove acid and sulphonated product still remaining and also chloral and chloral hydrate. The washing is done at 50 deg. C. with very dilute soda ash solution. Although high temperature assists removal of impurities, it accelerates hydrolysis of chloral.

The third step in the process is a further water wash of the product to remove sodium salts of sulphonated materials which still remain, and to eliminate mechanically, entrained soda ash liquor. This step is very important as the alkali will destroy D. D. T.

The next and final step of purification is the stripping off of chlorobenzene

from D. D. T. to the level required by specification for technical grade D. D. T. A temperature of not more than 105 deg. C. should be maintained as otherwise D. D. T. will be decomposed.



For this purpose the mixture of D. D. T. and chlorobenzene is steam-distilled. The D. D. T. is then directed from chlorobenzene stripping unit to spray crystalliser assembly.

The raw materials and energy consumption per 1,000 lbs. of D. D. T. are approximately 360 lbs. of alcohol, 1,200 lbs. of chlorine, 900 lbs. of sulphuric acid, 900 lbs. of chlorobenzene, 20 lbs. of sodium carbonate, 3,500 lbs. of steam and 96 kWh.

Formulation of D. D. T.

The remarkable effectiveness of D. D. T. against a host of insects has resulted in the development of many methods for the formulation of the compound to meet the requirements of specific insect problems.

Dust Mixtures:

Dust mixtures containing 10 per cent or less of D. D. T. are prepared by grinding a blend of this material with a diluent (kaolin type clay, talc, calcite, etc.) or by diluting a previously ground concentrated mixture. Dilution of concentrated mixtures is often resorted to, as thereby, it is possible to obtain a lower grinding cost per pound of D. D. T.

Any of the diluents mentioned above or others of similar nature may be used.

SOLUTIONS

In the selection of a solvent for the preparation of D. D. T. solutions, its ability to dissolve at the temperature at which it is used and at which it is stored and its fire hazard must be taken into consideration. Technical D. D. T. because of its comparative cheapness is generally used. The insoluble materials require filtration to prevent clogging of small orifices or to yield a clear solution. D. D. T. solutions are prepared as concentrates for later dilution with cheaper solvents. Though solvents like cyclohexanone, methyl-ethyl-ketone, isophorone are used, a popular combination is, D. D. T. 1 lb; Xylene 1 quart, and enough kerosene to make one gallon of solution.

Kerosene and low gravity fuel oils have been used most extensively. The solubility of D. D. T. in 100 cc. of kerosene at 27/30 deg. C. ranges from 4 grs. for odourless kerosene to 16 grs. for other types. To D. D. T. solutions to be applied to ponds and other bodies of water, it is desirable to add a spreading agent like oleic acid from 1 to 2 per cent.

EMULSIONS

D. D. T. emulsions are prepared by diluting with water an emulsifiable concentrate consisting of a solution of D. D. T. in an organic solvent and an emulsifying agent. High capacity solvents

are generally used in such systems. One recipe consists of D. D. T. : 25 per cent, Tritons 100 : 10 per cent and xylene : 65 per cent, all by weight. This system readily emulsifies on pouring into water. Emulsions of this type which contain volatile solvents upon evaporation of water and solvent leave on sprayed surfaces a coating of non-crystalline D. D. T. which later crystallises. Emulsions made with less volatile lubricating oils coat the surfaces with a solution on evaporation of water. Such products may be made by dissolving D. D. T. in a commercial emulsifiable mineral oil or by adding a concentrated D. D. T. solution to such commercial products. In the formulation of D. D. T. emulsions, the use of solvents appreciably soluble in water should be avoided because they cause precipitation of D. D. T. and clogging of the spray equipment.

PRESENT POSITION OF D. D. T. IN INDIA

The production of D. D. T. in India is practically insignificant being about 20/30 tons per annum. About ten firms have been reported to be making D. D. T. either on a laboratory or semi-commercial scale ranging from 50 to 5,000 lbs. per annum. The lack of enterprise in the field of commercial manufacture is mainly due to the high cost of machinery and equipment which have to be imported. As the departments of Public Health and Agriculture have no concrete programmes on the use of insecticides, it is difficult to assess the annual requirements with any degree of accuracy.

However, some estimate the annual consumption at approximately 1500 tons. At present nearly the entire requirements have to be met by foreign imports. To get over such a situation, it is highly necessary that plants are set up in India for commercial production of D. D. T. at least to meet our partial requirements—to begin with.

As early as 1946, the D. D. T. Subcommittee which had been formed by the Government of India, considered the possibilities of commercial production in India. An analysis of the various items involved in the production revealed that chlorine, sulphuric acid and benzene formed a very considerable portion of the expenses for an industry contemplating the manufacture of D.D.T. alone, purchasing the raw materials in the market. It should, therefore, be obvious that successful and economic production is contingent on the manufacturer producing chlorine and sulphuric acid himself. The minimum economic unit of production will be about 25 tons per month involving a capital expenditure of Rs. 15 lakhs. It has been estimated that the cost of production of 100 lbs. of D.D.T. would approximately be Rs. 155 working out to Rs. 1/9/- compared to the cost of the imported material ranging from Rs. 2/8/- to Rs. 3/12/- per lb.

It is pleasing to note in this connection that the Government of India, in pursuance of a joint plan of operations by the World Health Organisation and

the U. N. I. C. E. F., have proposed to manufacture D. D. T. The factory is to be set up in Delhi for the manufacture of 700 tons of D. D. T. per annum. The U. N. I. C. E. F. will supply plant and equipment for the factory and W. H. O. technical aid in the shape of training facilities and experts. The Delhi Cloth Mills will supply chlorine, sulphuric acid and also provide land, water and power. Alcohol will be obtained from a factory 50 miles from Delhi. The Government of India will arrange to obtain the required quantities of benzene from operating plants in the coal field areas in West Bengal and Bihar. It is expected that the plant will go into full production by June 1954.

The following indicates the probable cost that will be borne by the partners in the project.

1. Plant and equipment to be provided by U.N.I.C.E.F.	250,000 = Rs. 22,87,500
2. Technical assistance by W.H.O. (\$ 35,000)	= Rs. 1,66,000
3. Government of India	22,45,000
Total	Rs. 46,98,500

Economic and successful production of D. D. T. on a commercial scale is possible in India, particularly by chlorine and sulphuric acid manufacturers, but private capital is rather difficult to be found on account of the high costs of investment. Neither the State alone can embark on

the scheme. What is needed is a co-operative effort by both industrialists and Government. It would be preferable to locate the D. D. T. plant as well as chlorine and sulphuric acid manufacturing units in close proximity to the coal fields producing benzene, so that almost all the raw materials could be had at site. In the alternative, chlorobenzene could be made at the site of the coal fields and transported to the places of manufacture of D. D. T. where chlorine and sulphuric acid are also made.

In South India, Alwaye enjoys distinctive and enviable advantages and the location of a D. D. T. plant at the place will be worthwhile.

The proposed D. D. T. project in Delhi will prove to be an augury for an auspicious future for organic chemical industry in general, in our country. Let us hope that more such industries will come to be established in an effort to attain to the high national ideals India has set for herself.

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SLOGANS IN TRADE AND COMMERCE*

by
K. K. RAMAN

SLOGANS, more slogans and still more slogans seem to be the order of the day. You have a slogan for anything and everything—be it social, political or economic—and it has an instant appeal to the common man. Take for instance the popular slogan “Honesty is the best policy”. The all-comprehensive significance and applications of this slogan to work and service cannot possibly be better expressed than in this manner to capture the imagination of the casual, unthinking and hurrying man.

The craze for consumer goods including a variety of luxury articles so essential to modern civilised existence has inevitably shaped new techniques in advertising. Life itself is so mechanised that an increasing flow of such goods cannot be halted whatever struggle it may entail to establish and popularise any one product in a competitive economy. In this process, the part played by slogans constitutes, indeed, a specialised art of advertising.

Just as headlines are vital to attract the reader's attention to the importance of news items in the daily Press, so also slogans highlight advertising and form an integral part of the art of publicity in trade and commerce. Slogans concern themselves with a branch of popular advertising and exercise tremendous power in commercial practice by the nature of its

approach, domination, concentration and repetition. As a selling force, slogans set people thinking and thought leads to action and finally action results in habits.

ORIGINS

Before considering the use to which trade and commerce put the slogan, let us first consider its evolution. According to the Oxford English Dictionary, the word slogan means “Highland war cry”, “Party catchword”, “Motto”, “Rule to act upon in life and trade.” The word is derived from the Gaelic “Slaugh-Gairm”, the battlecry of a highland clan. Over the years, the word has acquired new connotations, and we use it now chiefly in the sense of a motto, political or commercial. The object of a slogan is to rally a wavering, vacillating or indecisive public towards a focal point which, in political life, may end in the victory of a particular party and in trade may result in the pushing of a sale. As the scope of this talk is restricted to trade and commerce only, I do not propose to say anything about political slogans beyond referring to only one slogan. The simplest, most direct and most powerful slogan coined in recent years did not originate in the offices of an advertising agency, but in the brains of a little man, who shook an empire—Mahatma Gandhi. His slogan was “Quit India”.

Whether the slogan is there or not in press advertising, it generally finds a place in poster advertising. Slogans loom large in posters because the purpose of a poster is to tell a story at a glance. A poster, wherever it is exhibited—on a hoarding, a bus or a tram or in a railway station—must be simple in treatment. The people whose attention the poster is designed to attract are in a hurry, and the message has to be put across to them in a flash. As Fougasse, the famous British artist, puts it, a poster has three main obstacles to overcome:

“Firstly, a general aversion to reading notice of any sort, secondly a general disinclination to believe that any notice even if read can possibly be addressed to oneself. Thirdly, a general unwillingness even to remember the message long enough to do anything about it.”

In overcoming these obstacles, the slogan is a great help. The wartime slogan “Careless talk costs lives,” for example, does not seek to prove anything. A message is stated and just left to sink in the subconscious mind of the people who may notice it.

CONSTRUCTION

Slogan construction involves the blending of a happy phrase to fit the caption line and a telling caption is essential where popular attention is sought to be arrested and kept alive in favour of the product advertised. But the mania for catchy slogans in competitive trade has developed to fantastic proportions

recently. Public preference for a product is sought to be fixed by means of attractive prize offers for helping the manufacturer to choose the best slogan to describe the dominant quality of a product.

Slogans combined with clever cartooning are powerful in catching the eye and enslaving the mind. The caption “You don't know what you are missing” with the illustration of a well-known brand of cigarettes is almost memorized by dint of repeated visual contacts. Imperative in its wording, but with a touch of fellow feeling, a slogan goes a long way as a piece of propaganda. “Tune in to the world with such and such radio”, “Buy a tin today” or “Keep Fit and Healthy”—suggesting the use of a fruit salt—are slogans said with both grace and effect. Then again there are slogans which seek to educate you in the compass of a short and well-aligned sentence. “You are much better off with our car,” says a reputed motor manufacturer giving a momentary picture of better comfort, speed, safety and value for money paid.

The commercial slogan has, however, its limitations. A slogan cannot be of much use in marketing technical products. The public for such products investigate the reasons behind statements. In the “reason-why” copy, the manufacturer should attempt to prove the merits of his products. He has to detail the value of the particular line of goods—be it a consumer product like *Vanaspathi* or a

* Reproduced by kind permission of All-India Radio.

chemical like bleaching powder, and then explain why his brand should be preferred. "Stunting" is completely out of place in the placing of utility or technical goods. What is required is propaganda of the informative type, but slogans can only be smart and snappy—they cannot describe.

EMOTIONAL COPY

In advertising where emotional copy is used, the slogan can be very effective, because it appeals to the reader's emotions of fear, sympathy, pride, vanity—in fact, all those fundamental instincts in man which register reactions promptly. Dale Carnegie, famous author of *How to win friends and influence people* observed once. "When dealing with people let us remember we are not dealing with creatures of logic. We are dealing with creatures of emotion, creatures bustling with prejudices and motivated by pride and vanity."

One well-known brand of toothpaste uses the line, "Four out of every five" indicating the prevalence of pyorrhoea. This is clearly directed to the reader's fear of this disease. Life insurance companies often harp upon the horrors of poverty and dependent families. "Own Rs. 5000 at 55" "Give yourself a pension", "Her son could still go to college," all these are forceful examples of this type of copy. "A week's holiday in Kashmir for Rs. 200" is a much better and more effective form of statement than a bald one like "Visit Kashmir."

A good slogan can really boost business. A slogan is the central idea of an advertising scheme, divested of its story. As one author puts it, "It is the sun without the planetary system, it is a soul without the body." Indeed, the slogan is only our old friend the headline in fancy dress. As already mentioned, it derives its power from repetition. The headline may change with each new advertising design, but the slogan will always be there. Thus slogans like "First with electricity to the farmer", "Say it with flowers", "Beer is best," you find repeated in copy after copy, *ad infinitum, ad nauseam*.

A slogan however catchy it may be is useless if it does not enable the hurried reader, the one who will not devote time to reading the whole of the text, to grasp immediately the substance of the advertisement. It is, however, a most difficult job to combine snap with substance, but it is a worthwhile task. For example, how hackneyed the phrase "An ideal gift" sounds compared with "A gift you will want to keep...yourself".

The first essential of a slogan is rhythm, then alliteration, then brevity, and then come aptness and "specifiedness", irrespective of the product advertised. Twists of quotations and proverbs, quibbling and word-play often result in the making of good slogans. Shakespeare's famous line "What fools, these mortals be" was turned by a hotel proprietor into "What foods these morsels be". A West End haberdashery

firm uses the slogan "Rest assured" playing on the first word—in the placing of its pyjamas.

In our own country, rather boisterous and rabble-rousing methods are used by small-scale manufacturers of products like *bidis*, soaps and scents at fairs and festivals. A chorus of street urchins are made to mouth the slogans in a sing-song manner. One set of criers ask what *bidis* are to be smoked and the answering batch echo the name of the sponsored brand.

LIMITATIONS

Amid a plethora of commodities jostling for recognition, the tradition or reputation of a firm seems no longer a safe enough passport for popularising a product. Even methods of publicity are constantly changing, and the slogan which had played its part successfully in securing a widening custom may perforce have to give place to others, in the wake of the fast strides that we are making in the field of science. For instance, "ad-skits" put over the air and through television may open up new vistas of human tastes and standards.

But, it is rather to underestimate the intelligence of customers to expect them to swallow tall statements like those issued by film stars and fashion leaders stating that they owe their beauty to the

use of a particular brand of soap or cream.

Taking a dispassionate view, it must be said that while slogans might help trade by holding high the virtues of a product to the customer, they do not invariably reveal its intrinsic merit. Scope exists for slogans being abused when they tend to hypnotise the public and to rob them of their sense of discrimination and power of judgment. Another danger is that a new manufacturer may be placed at a disadvantage and perhaps be swamped under by an affluent competitor with resources to lavish on a slogan campaign. When a foreign interest promotes such a campaign, trade has recourse to that handy slogan "Buy Swadeshi" which whips up national sentiment, and helps to save the commerce of an under-developed country.

The great Rotary slogan "Service above self" which, as applied to business and professions, is considered the hallmark of vocational life, can also be a power in trade and commerce. For the advancement of commerce, internal and international, the emphasis on service before profit, would appear in the future to have a lasting value.

Whatever be the product, or whatever the result, be it ephemeral or ever-lasting in effect, a slogan is more often than not a brain-wave—which is one of the philosopher stones of advertising.

METKEM News

NEW CAUSTIC SODA PLANT

ON December 23, 1952, the 20-ton Caustic soda plant of the Travancore - Cochin Chemicals, Limited, Alwaye, was formally declared open by Mr. Panampalli Govinda Menon, Minister for Industries and Finance, Travancore-Cochin State. Among others who attended the function was Mr. A. J. John, Chief Minister, Travancore-Cochin.

In a welcome address presented to the Minister, Dr. P. V. Nair, Director of Industries, Travancore-Cochin State, and Chairman, Board of Directors of the Company said that the Travancore-Cochin Government had sponsored the project and had given it all possible assistance. Originally the project was to be a partnership between the Fertilisers and Chemicals, Travancore, Limited, and the Mettur Chemical and Industrial Corporation, Limited, with a capital of one crore of rupees, but money market conditions so deteriorated in recent years that the scheme had to lie over till early 1950. Around this period, he went on, the Travancore-Cochin State appreciated the soundness of the project and came forward with financial help. As a result, the Travancore-Cochin Chemicals, Limited, consisting of the T.C. Government, FACT and Mettur Chemicals, was formed.

Dr. Nair expressed the hope that the factory would contribute its share to freeing the country from its present dependence on foreign imports of caustic soda.

Mr. R. V. Ramani, Director, then read messages wishing success to the venture from Dr. C. H. Bhabha, Mr. J. D. Choksi, Dr. S. S. Bhatnagar and several others.

Declaring the plant open, Mr. Govinda Menon said that the State had, during



Members of M. C. I. C. Staff who helped in the "start-up" of the T. C. C. Factory at Alwaye.

the last few years, been pursuing a liberal industrial policy. It was noteworthy, he added, that they were about to produce chemically pure caustic soda by a technique which was being tried out for the first time in this country. He

expressed the hope that the industry which was being inaugurated that day would serve the needs of vital consumer goods.

Mr. M. CT. Chidambaram Chettiar, Managing Director, Travancore Rayons, Limited, and Mr. S. Vaidyanatha Iyer, Chairman, Board of Directors, M.C.I.C. were among those who made felicitatory speeches.

Mr. V. Seshasayee thanked the gathering.

In the initial trials and during the start-up of the plant, Mr. A. R. Narasimhan, General Superintendent and Mr.

SOCIETY OF TECHNOLOGISTS

The Society met on September 13, to hear Dr. M. M. David, Visiting Professor from the United States at the Indian Institute of Science, Bangalore. Dr. David spoke on "Industrial Research in the U. S." and the need for the maintenance of a research organization by every big industrial undertaking, with a long-range view of development and progress.

Dr. S. Krishna, Asst. Director, Central Food Technological Research Institute, Mysore, addressed the Society on



Sri Ajoykumar Mukherji, Minister, West Bengal (forefront) was one of our distinguished visitors in recent months.

L. R. Krishnamurthy, Chief Engineer, had the assistance of several members of M.C.I.C. staff. Among those who assisted were: K. Rajagopal, S. Ramaswamy N. Kalyanam, M. Padmanabhan, A. Krishnamurthy, V. Muthusamy and M. A. Arokiasamy.

October, 11, his subject being "Industrial Developments and Technological studies." The speaker pleaded for the harnessing of all our resources mostly by self-help.

On December 12, Mr. N. Sundaresan, B. Sc., Senior Chemist, M.C.I.C. presented

a paper on the "Manufacture of D.D.T." Elsewhere in this issue, this appears as a separate article.

Messrs. M. Padmanabhan, A. Krishnamurthi and V. Muthuswami presented papers on the "Manufacture of Caustic-chlorine by the Travancore-Cochin Chemicals, Limited, Alwaye," at the meeting of the Society on Dec. 20. The history of the project, the construction and operation of the Krebs mercury cells and the process of brine purification were the aspects dealt with by the speakers.

In his concluding remarks, Mr. K. Rajagopal, President, observed that the team sent on deputation by M.C.I.C. to help in the start-up of the T. C. C. plant, of which the speakers of the evening were members, had acquitted themselves most creditably, in operating and controlling the new plant.

WELCOME VISITORS

Among distinguished guests who paid us the courtesy of a visit in recent

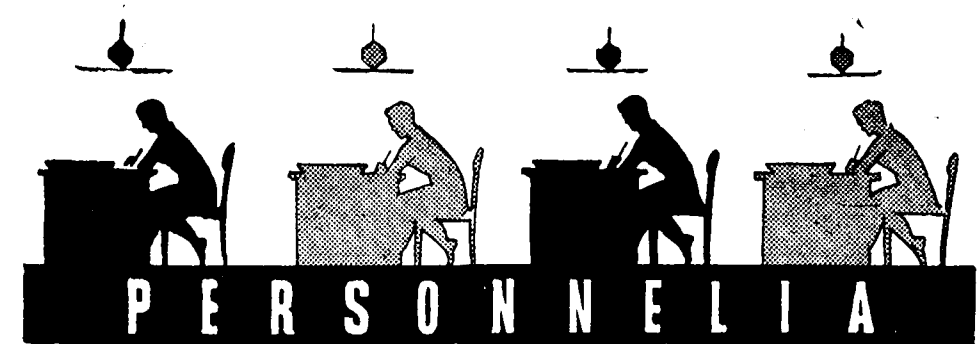
months were:

Mr. Ajoykumar Mukherji, Minister, West Bengal; Mr. T. K. Venkataraman., District Superintendent of Police, Chittoor; Mr. Justice Basheer Ahmed Sayeed, Madras; and Mr. P. Sharfuddin, District Judge, Salem.

FILM SHOWS

The following pictures were screened during October-December, 1952.

This time for keeps
Lumber States
Music in America
International Ice Patrol
Accident Service
Bewitched
To please a Lady
How a Cycle is made
Playing in Fire
Story of Louis Pasteur
A better tomorrow
Creative Leisure
Mrs. Parkington
This is Britain (No. 39)
Adventures of Don Juan
This is Britain (No. 40)



High, (slightly) wide, and handsome and looking like a Hollywood director's



N. Parthasarathy

idea of the picture-goer's idea of a Texan Ranger, N. Parthasarathy B. Sc. (Chem.) B. Sc. (Engg.) is one of our Assistant Engineers, and an extremely capable one at that. Until recently, he was attached to the Development Division, and is at present in charge of our Vanaspati, Drum and Tin-making plants. Endowed with an infinite capacity for taking pains, Parthasarathy can get things done with remarkable quickness. In this connection, the part that he played in the expansion programme of MCEC deserves special mention.

Of a pious and religious disposition, Parthasarathy brings to bear a calm and imperturbable mind on men and things.

Fixer: Talking of religious dispositions, we must mention that of late religion has completely "got" us at Mettur. All through the month we have one interesting discourse or another by some visiting scholar or savant. Looking after the comforts of such, fixing up programmes with them, etc., are the special tasks of Mr. K. V. Ramaswamy, Assistant Secretary. A great enthusiast, always happy and gay, K. V. R. is a firm believer in the maxim: "A religious discourse or two a day keeps the blues away".



K. V. Ramaswamy

Trouble Shooter: For reasons apparently obscure to others, but perfectly obvious to us, the sports membership of the Staff Association is not a much sought-after distinction. The normal course of day-to-day affairs runs smooth enough, but trouble bobs up to surface, when there is a tournament round the corner. And one who can meet Trouble in the face and make it look utterly silly is Sports Member P. B. Srirangan.

A B.Sc. (Honours), Srirangan is one of our most competent Chemists and can render into pleasant and readable Tamil, recondite technical articles.



P. B. Srirangan

An all-rounder, Srirangan is a Tennis and Table Tennis star of the first new job.

magnitude, and a first-rate wicket keeper to boot. He excels equally in Volleyball and Tennikoit.



N. Subramanian

Change of place—but same calling: Mr. N. Subramanian, M. Sc., one of our Research Chemists recently left us to join the Central Electro-chemical Research Institute at Karaikudi. Of a fine and amiable disposition, all his friends in Mettur will miss him greatly. As Mr. K. K. Raman, our Managing Director, put it at the farewell party got up in his honour, Subramanian should prove himself to be a great asset to the Karaikudi Institute.



New plants near Sindri: It is learnt that two new plants for the manufacture of urea and ammonium nitrate in the one, and methanol in the other, are proposed to be set up near Sindri with American aid. The former will cost about 9 million dollars, while the latter requires only installation cost as the plant has already been acquired from German disposal materials.

New source of bauxite: It is reported that large quantities of high grade bauxite are available in the hilly regions of Bilaspur district in Madhya Bharat. The deposits occur on top of hills, and mining operations will be easy as the overburden of laterite is thin. The ore is said to contain 58 per cent aluminium oxide 8 per cent titanium dioxide and low silica content. This will be suitable for recovery of titania.

Effective Insecticide: A team of chemist-entomologists of the U. S. Department of Agriculture has produced an insecticide containing a mixture of lindane (99 per cent benzene hexachloride) and chlorinated polyphenyls which is claimed to have twice as much killing power as

ordinary lindane sprays. Further there is no whitish deposit on the sprayed surface by crystallisation of lindane as in the case of normal lindane sprays. The addition of polyphenols suppresses the crystallisation of lindane and causes slower evaporation of solution, thus allowing lindane solution to remain for a longer time on the sprayed surface.

De Nora Cells: The first large installation of De Nora mercury cells in the U. S. went into production a few months back at the 15 million dollar caustic-chlorine plant of Army Chemical Corporation in Alabama.

It is stated that the cell room occupies an area of 2.25 acres. The cells operate at 30,000 amps, and each cell turns out 1.0 ton of chlorine gas (97—98 per cent pure), 1.7 tons of 70 per cent caustic soda, and 10,000 cu. ft. of hydrogen. To produce this, each cell requires 1.75 tons of salt, 3,100 kWh. (approx.) of electric power and 3,500 lbs. of recycle mercury. Anode tip in a 30,000 amp. 4.3 Volt cell is about 10 months; consumption of graphite electrodes is about 7 lb. per ton

of chlorine. The current efficiency of the cell is 94/96 per cent.

Plywood adhesive from cashew nut shell liquid: The Forest Research Institute, Dehra Dun, has developed a suitable thermosetting plywood adhesive composition from cashew nut shell liquid. Cashew nut shell liquid with 10 per cent phenol added is condensed into 89 per cent formalin in the presence of 2.5 of liquid ammonia at 60 to 70 deg. C. for four hours. The resin which does not show any adhesion to wood acquires the property when a suitable hardener-calcium hydroxide, copper carbonate, copper chloride, or activated charcoal is added to the solution of resin in trichlorethylene. The adhesive requires longer curing-time than phenol.

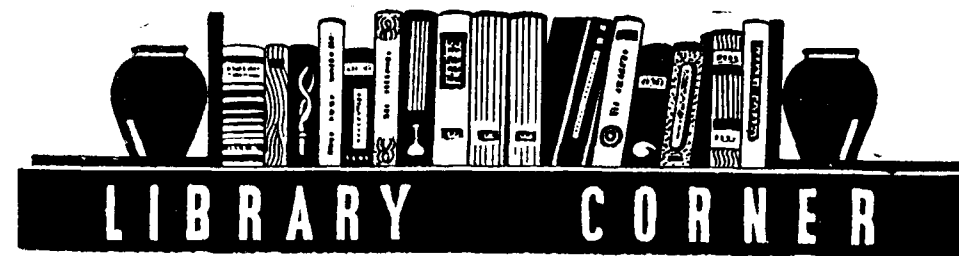
D.C. Tabs save time in nitrogen estimation: The Fisher Scientific Company has made available to the chemist who determines total nitrogen by the old Kjeldahl method

what are called D. C. tabs. The use of these tablets will save time in weighing the chemicals for digestion. The tablets are available in three formulations. No. 1 tablet is composed of 0.08 gm. copper sulphate, 0.41 gm. of mercuric oxide, and 9.9 gm. of potassium sulphate. One tablet is used for each determination.

No. 2 contains 0.3 gm. of copper sulphate and 10 gm. of potassium sulphate. One tablet is used for determination.

No. 3 is made of 0.35 gm. mercuric oxide and 9 gm. of potassium sulphate. Two of these tablets are necessary for each determination.

The tablet is added to the digestion flask by slowly sliding it down the neck of the flask by holding the flask slightly inclined. The rest of the procedure is the same as for nitrogen estimation by the Kjeldahl method.



FIFTH ANNUAL REPORT (1951-52) (ISI): Published by the Indian Standards Institution 19, University Road, New Delhi—Price Rs. 2/- (Free to Members.)

C. Verman, Director, Indian Standards Institution, is its Vice-President.

* * *

THE fifth Annual Report of the Indian Standards Institution makes interesting reading and offers striking testimony to the fact of the completion of yet another useful year by it. It continued to receive support both from industry and Government. The Report shows that membership of the Institution rose from 684 in 1950 to 758 in 1951 with a corresponding increase in the subscription collected, from Rs. 1,86,500/- to Rs. 2,06,255/-. The number of new Indian Standards published by the Institution during 1951-52 was 112.

The Report, also, mentions the active co-operation and assistance that ISI received during the year from all quarters in the country, and particularly from the Laboratories of the Council of Scientific and Industrial Research, the Forest Research Institute, Dehra Dun, the Technical Development Establishment Laboratory (Stores), Kanpur, and the Government Test House, Alipore.

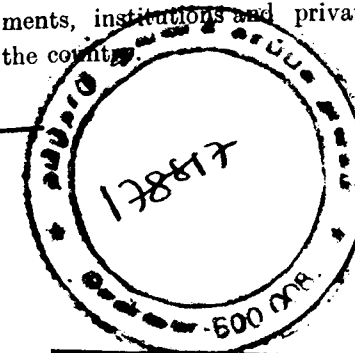
Two notable features of the year are: (1) ISI is an elected member of the Governing Council of the ISO (2) Dr. Lal

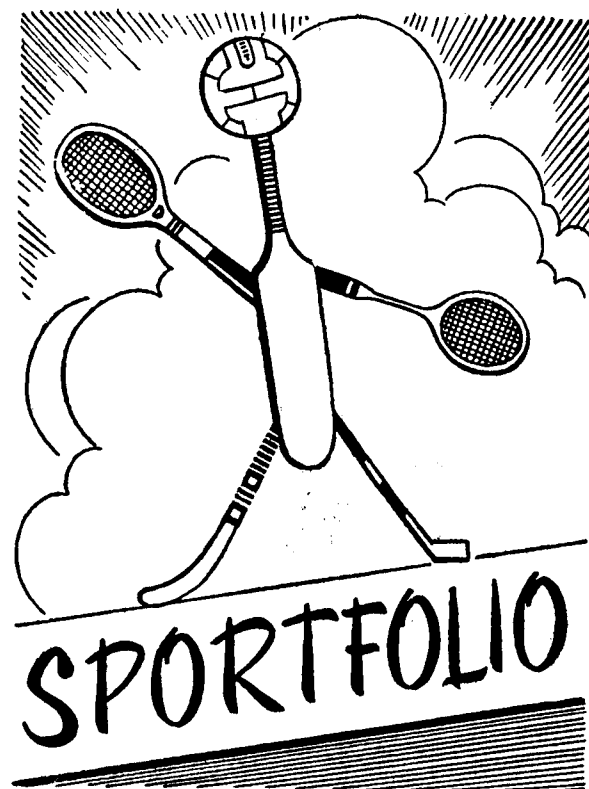
TECHNICAL ASSISTANCE: Published by the Ministry of Finance, Government of India, New Delhi—Price As. 10/-

THIS booklet seeks to explain the details of the various technical assistance programmes that obtain with the United Nations and its specialized agencies, under the Colombo Plan, under Point-4 and with a few private organisations like the Ford Foundation. It includes, also, a chapter on the facilities that India has already offered in the past and proposes to offer in the future. For instance, during 1951-52—the first year of the Colombo Plan—India supplied three experts to Ceylon—one to advise on the manufacture of caustic soda and allied products, one for the sericulture industry and another for an iron and steel project.

Sketchy in scope, the booklet gives a Government of India-eye-view of several technical assistance programmes available to Central and State Governments, institutions and private firms in the country.

—R. P.





Cricket: We played the first match of the season against the Sourashtra Cricket Club, Salem, on our grounds, on August 31, 1952 and lost by 60 runs.

Put in to bat after we had won the toss, the visitors hit up a total of 168 for 7 and declared. A. N. Sundararajan (72) T. S. Krishnamurti (29) and M. K. Thirumal (20) were the main scorers. R. G. Raghavan took 3 wickets for 41 and K. Sampath 2 for 26.

Our team could score only 108 in reply, N. Kalyanam being our top scorer with his 27. For the visitors, N. T. Ramachandran bagged 6 wickets for 21 runs, and K. Bashyam 2 for 33.

Our second match was with the Tamil Nad Cricket Club, Salem, on our grounds. This came off on October 26, and we won it by the narrow margin of 19 runs.

Winning the toss, we batted first and ran up a total of 153. N. Narayanan, our promising starlet, hit up a nice 51. K. R. V. Raman (28) and K. Sampath (23) were our other big performers. S. Narayanan of the visiting team captured 8 wickets for 36 runs.

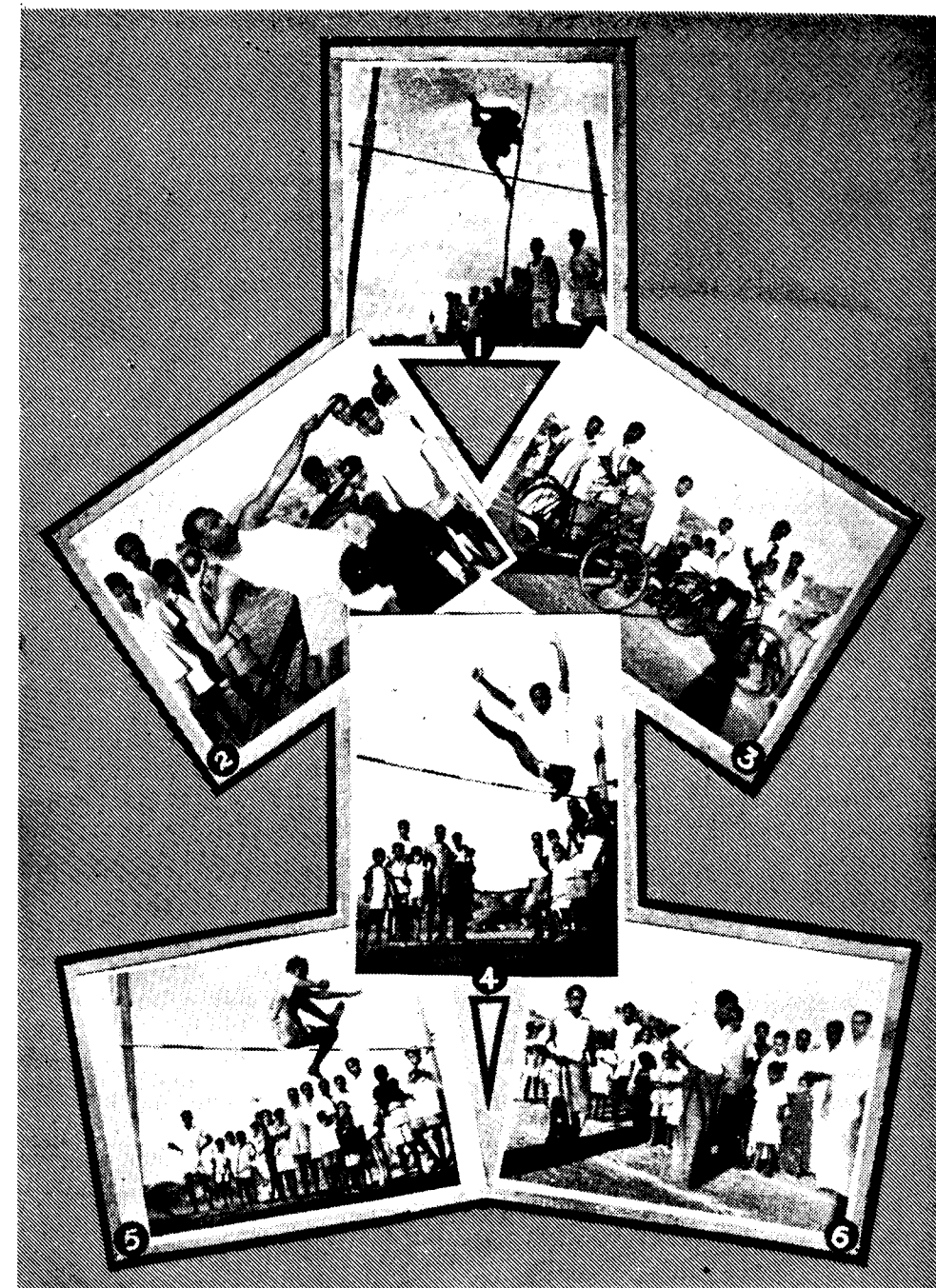
Our bowlers managed to dismiss 9 of the visiting batsmen for a total of 90 runs only, but a lively last-wicket stand of 44 runs between V. Gopal (35 n.o.) and Sundaram came perilously near robbing us of victory. R. G. Raghavan and T. D. Krishnasami took 3 for 58.

Our third match which was played against the Salem Cricket Club at Mettur on December 28 ended in a draw.

Batting first, the visitors piled up runs to reach 213. S. Balakrishnan, skipper, was their top scorer with his 48, while D. Narayanan, another enterprising bat in the side, knocked off a breezy 33. K. Ganesh took 5 for 53 and K. Sampath 3 for 30.

Wickets fell at painfully regular intervals as our side started batting, and it cannot be gainsaid that we did spend anxious moments. But, then, our tail wagged vigorously to play out time. (N. Kalyanam 3, Srinivasagopalan 5 for 54).

Badminton: In December 1952, we sent out a team (S. S. Murthy and R. K. Samy) to participate in the Salem Posts



(1) Pole-vault—L. Venkatadoss-I (2) Shot-put—T. A. Javanthinathan-I (3) Slow cycle race—(L) R. Dorairaj-I (R) L. Venkatadoss-II (4) High Jump—L. Venkatadoss-II (5) High Jump—R. Krishnaswamy-I (6) Sack race—(R) T. James-I (L) N. Raman-II

and Telegraph Recreation Club Annual Doubles Tournaments. They beat an Edappadi Team (29—20, 29—18) in the first round, but went down before Joti Sports, Salem, in the next round (12—29, 15—29).

Annual Tournaments: Tournaments connected with the Staff Association Annual Day celebrations are always a big draw—if you get what we mean—and the tournaments of this year, did not belie expectations.

Badminton Doubles: (15 entries)

All the matches in the senior round and some in the qualifying round provided plenty of interest and some excitement. The best match was of course the finals in which P. B. Srirangan and R. K. Samy beat S. S. Murthy and S. Panchapakesa Iyer surprisingly enough in two games (29—27 and 29—26). S. P. Iyer was not exactly off colour, but it was not his day. N. Sundaresan and P. Chockalingam were the winners in the qualifying round.

Badminton Fives: (9 entries)

S. S. Murthy and partners beat K. Ratnam and partners in the Finals without much difficulty (16—29, 29—5, 20—20).

A feature of this tournament was the sensational debut of our 'Doctor' Ramakrishnan, who wielding—for the first time in his life—a badminton racket, qualified himself for a prize. Congrats, Doc.

Volleyball Sixes: (11 entries)

Volleyball matches drew the biggest crowds and, possibly, more than the

players themselves, the spectators enjoyed every minute of the play. A merry melange of novices and veterans and players who did not come under either category made up each of the teams that entertainment was a foregone conclusion. In the finals, T. A. Javanthi-nathan's team beat S. Ramakrishnan's team after rather tame play (15—11, 15—3).

Volleyball (Triples): (11 entries)

The fact that a stronger team could lose a match to a weaker team was illustrated in the match between N. Venkataraman's team and N. Venkatachalam's team. Venkataraman's team was definitely the better side, but it had to yield the palm to Venkatachalam's team. In the finals, Venkatachalam's team beat A.P.S. Mani's team (15—7, 6—15, 15—11).

Tennikoit Doubles: (20 entries)

Some of the matches were peppered with plenty of thrills. The biggest upset, however, was the exit of the strong and much-fancied R. Srinivasan - V. Muthu-sami combination in the senior round brought about by T. D. K. Sami and his partner S. Muniyappan. T. D. K. Sami played very well indeed in the second and third sets to win the match, his tape shots coming off beautifully.

P. R. Subramanian and T. Antony (another good pair) are in the final round, yet to be played. N. S. Parameswaran and K. Ratnam were the winners in the qualifying round, the former giving a consistently brilliant display.

Cricket: (4 entries)

After a hectic hunt for 44 players (past, present and future) four teams were somehow made up.

The first match between T. D. K. Sami's XI and N. Kalyanam's XI was played on November 23, the former winning by 72 runs. The match was a personal triumph for teenager, N. Narayanan, who missed his century by 15 runs, and bagged 5 wickets for 18 runs. Captain Kalyanam's gamble in putting T. D. K.'s team in to bat after winning the toss, did not unfortunately pay off.

Scores: T. D. K. Sami's XI 163 (N. Narayanan 85, T. Antony 25, N. Kalyanam 3 for 45, R. Srinivasan 3 for 37) N. Kalyanam's XI 91 (N. Kalyanam 29, T. S. Subba Rao 27, N. Narayanan 5 for 18, T. D. K. Sami 3 for 34.)

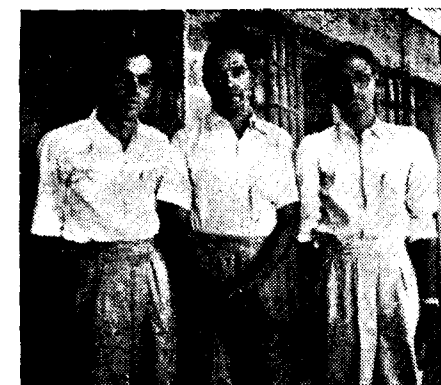
Sensational cricket was witnessed on our grounds on December 14, when R. G. Raghavan's XI beat K. Sampath's XI by 52 runs. Forty wickets went west in a single day (in less than 5 hours) for a paltry combined total of 216 runs. R. G. R's XI, a strong batting side, was dismissed for 60 runs and when K. Sampath's team started their innings they were routed out for the cheapest ever total of 22.

Raju, Ramakrishnan and Raghavan were the bowlers who did the damage both to wickets and to morale. In the second innings, slightly better batting was witnessed.

Scores: R. G. Raghavan's Team 60 (Raju 6 for 23, K. Ganesh 4 for 34) and

74 (K. R. V. Raman 38, K. Ganesh 4 for 31 and Raju 3 for 13). K. Sampath's XI 22 (K. R. Ramakrishnan 5 for 9, K. G. Raghavan 4 for 13) and 60 (G.G.V. Raman 26, R. G. Raghavan 3 for 31 and K. R. Ramakrishnan 4 for 17).

The finals between T. D. K. Sami's XI and R. G. Raghavan's XI played on December 21 was a keenly fought-out



Volley Ball Trebles: Winners—V. Muthuswamy, N. Venkatachalam and M. Padmanaban

match and had a thrilling climax. T.D.K. Sami led his young team to victory by 4 wickets.

R. G. Raghavan's XI hit up 100, P. B. Srirangan knocking off a lively 34. N. Narayanan captured 7 wickets.

After a nice start by skipper T. D. K. Sami and T. G. Rangan, 4 good wickets fell for 42 runs, and thereafter prospects seemed rather gloomy. But a fighting stand of 41 runs for the fifth wicket between Suri and T. Antony wrested the initiative back for them from their opponents. Two more wickets fell and then young Kolandaisami, playing a

plucky innings, slowly advanced the total to 100 amid mounting excitement. And when he cracked a ball from K. R. Ramakrishnan to leg for four to pass their opponents' total, victory was registered amid stentorian cheering.

Scores : R. G. Raghavan's XI 100 (P. B. Srirangan 34, N. Srinivasan 20, N. Narayanan 7 for 23, T. D. K. Sami 3 for 49). T. D. K. Sami's XI 103 for 6 (T. D. K. Sami 27, Suri 27, Antony 14, Kolandaisamy 14 n. o. R. G. Raghavan 4 for 49).



Weight Lifting : Arumugam
Senior Prize - Winner (167 lbs.)

Table Tennis : Although this game was started here only about six months back, there were as many as 29 entries for Singles and 13 for Doubles.

Singles : In the qualifying round, M. S. Ramaswamy beat C. S. Srinivasan 21-18, 16-21, 21-19 and 21-15. The latter who had in him the stuff to extend his rival to the full range of 5 games—or so he told everyone before the match—

told everyone after the match that he gave in because he did not feel like prolonging the agony—of the spectator !

In the senior singles, the match between K. R. Ramakrishnan and P. B. Srirangan, (which Srirangan won) was an interesting duel of close-to-the-table rallies, excepting for the last game which was practically a walk-over for the winner. The match between T. S. Subba Rao and P. B. Srirangan was exciting and there were many good rallies and smashes. It went through the full gamut of five games—T. S. Subba Rao, ultimately emerging victor. The result, however, hung in the balance till the last moment. In the finals, Subba Rao met V. R. Krishnan, who, by the way, had not conceded even a single game to his opponent in his progress to the finals.

Krishnan could not, however, put up much resistance to Subba Rao who won 21-15, 18-21, 21-8 and 21-18.

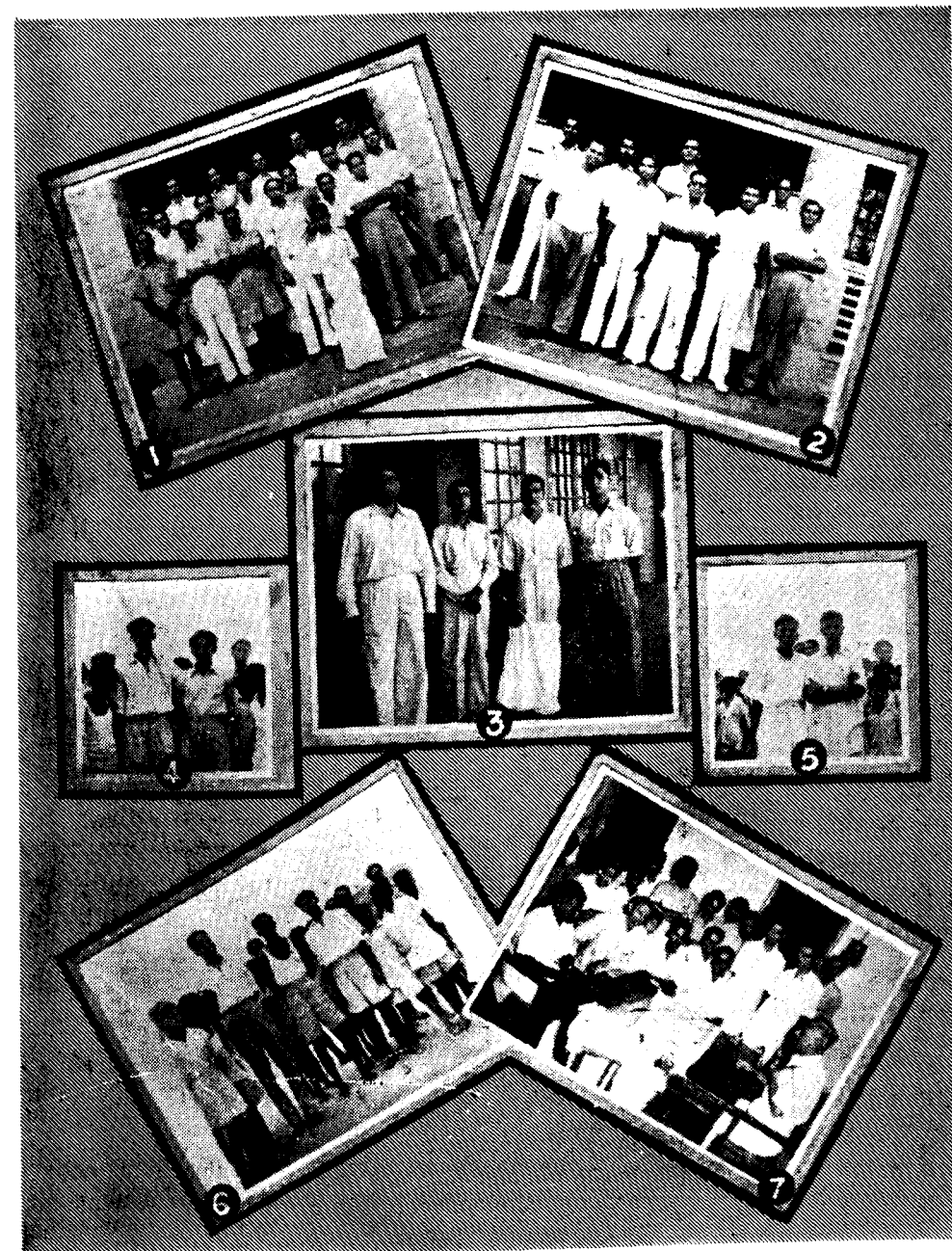
Doubles :

The matches were not as good as they could have been—we have yet to accustom ourselves to Doubles play. The rule of alternate return and the consequent confusion cramped the free and easy style of the players.

P. B. Srirangan and S. Ramamurti beat K. Rajagopal and M. S. Ramasamy easily enough in the finals. (21 - 17, 21 - 9, 19 - 21 and 21 - 17.)

Chess : (8 entries)

Our No. 1 (T. K. Sitaraman) being absent on long leave, could not defend his



(1) Some of the prize-winners in the games and tournaments (2) Winners of the inter-club annual cricket tournament (3) Contract Bridge Winners—R. Natarajan, K. K. Raman, T. V. Krishnamurthy and A. R. Narayanan (4) Three-legged race—T. Antony & Muniappan-I (5) Three-legged race—S. Venkataraman & K. Palaniappan-II (6) L-R. 1. G. G. Venkataraman—Hop-step and Jump—II 2. L. Venkatados—Long-Jump and Hop-step and Jump-I 3. T. Antony—Long Jump-II (7) Auction-Bridge in action—Facing Camera—T. M. Krishna Rao To his Left—K. K. Dharmarajan Back to Camera—P. A. Ragupathy Iyer To his left—S. Panchapaksa Iyer

title. P. R. Subramanian and N. Krishniah fought it out in the finals in four games spread out to two days, the former winning by 2 games to 1, one being drawn.

Caroms: (14 entries)

After two or three rounds were played the matches were cancelled owing to "technical and other difficulties". Ironically enough, it fell to the lot of the energetic Vice-President of our Association—who was chiefly responsible for the inclusion of this item in the tournament—to write it off the list.

Auction Bridge: (14 entries)

Not much to report; the defeated teams complained as usual of Dame Fortune's desertion during crises.

Contract Bridge: (6 entries)

K. K. Raman and R. Natarajan (Secretary) beat A. R. Narayanan and T. V. Krishnamurti in the finals by the narrow margin of 50 points, this match also being decided only on the last deal.
Literature: (11 entries)

S. Sambandamurti's team is in the finals, and is to meet A. R. Narayanan's team. The match is yet to be played.

Field and track events are in progress.

A word about our spectators whose enthusiasm often outran discretion. Advice and admonition were freely frankly and fearlessly offered. Encouragement of players is all to the good, but to ask 'A' during play to send the ball to 'B' and not to 'C' is not simply done—it is not just cricket.



Weight Lifting: Balasubramaniyan
Junior Prize - Winner (137 lbs.)

Now for a word about umpiring, which was of a very high standard. Special thanks are due to Messrs. R. G. Raghavan and Venkatachalam, who ably assisted by the Sports Member in the conduct of the tournaments, did most of the umpiring themselves in exemplary manner.

LIST OF PRIZE-WINNERS

	<i>In field events</i>	<i>Distance or Height cleared</i>
<i>Cricket Ball Throw</i>		
Nagarajan (W. W.)	I Prize	209' 10"
Venkatadoss L.	II Prize	208' 5"
<i>Shot Put</i>		
Javantinathan T. A.	I Prize	35' 0"
Nagarajan (W. W.)	II Prize	34' 5½"
<i>High Jump</i>		
Krishnaswamy R.	I Prize	4' 7"
Venkatadoss L.	II Prize	4' 6"
<i>Long Jump</i>		
Venkatadoss L.	I Prize	17' 9½"
Antony T.	II Prize	15' 6½"
<i>Hop, Step and Jump</i>		
Venkatadoss L.	I Prize	36' 1"
Venkataraman G. G.	II Prize	34' 11¼"
<i>Slow Cycle Race</i>		
Dorairaj R.	I Prize	
Venkatadoss L.	II Prize	
<i>Pole Vault</i>		
Venkatadoss L.	I Prize	8' 2"
Chockalingam P.	II Prize	8' 0"
<i>Sack Race</i>		
James T.	I Prize	
Raman N.	II Prize	
<i>Three-Legged Race</i>		
Antony T.	}	I Prize
Muniappan S.		
Venkataraman S.	}	II Prize
Palaniappan K. A.		



மெட்கெம்பத்திரிகை.

2. என்னைக் கேட்டால்.....?

“ஹெல்பர்”

என்னுடைய கதையை எங்கே ஆரம்பிப்பது என்றே எனக்குத் தெரியவில்லை. சரி, ஒரு மாதிரி சொல்கிறேன், கேளுங்கள்.

எங்களிலே முக்கால் வாசிப்பேர் கொஞ்சம் சுமாராகப் படித்தவர்கள். இங்கே வேலைக்கு வரும்பொழுது முன் அனுபவம் ஒன்றும் இல்லாதவர்கள். என்னென்றால் மூல ரசாயனப் பொருள் உற்பத்தியே இந்த நாட்டில் புதிது தானே?

முதலிலே வேலை சற்று சிரமமாகத்தான் இருந்தது. மூக்கைத் துளைத்து, சுவாசத்தை அடைக்கும் க்ளோரின் வாயு, மேலே விழுந்தால் அரித்துப் புண்ணாகச் செய்யும் காஸ்டிக் லை (lyo), கந்தக, ஹைட்ரோ க்ளோரிக் திரவங்கள் முதலியவை எங்களைத் திணற அடித்துவிட்டன. மெதுவாகச் சமாளித்துக் கொண்டு வந்து இப்பொழுது அவற்றைக் கையாளுவதில் ஒருவாறு நல்ல தேர்ச்சி அடைந்து விட்டோம். இருந்தாலும், அப்பப்பா, ஒவ்வொரு தடவை க்ளோரின் எங்காவது வெளிப்பட்டால் உண்மையாகவே

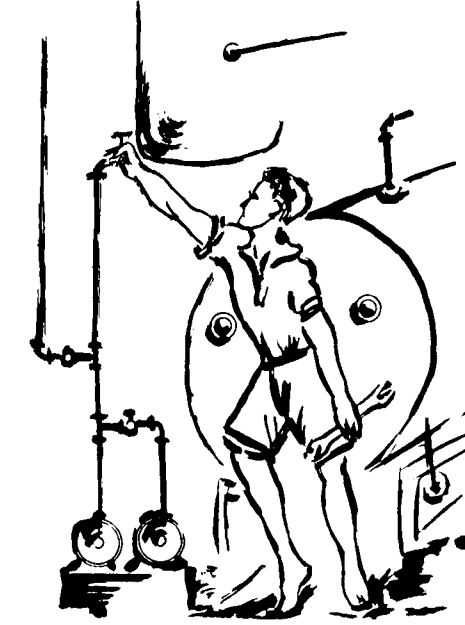
“மூக்கைப் பிடித்துக்கொண்டு” முக மூடியுடன் வேலை செய்யவேண்டி இருக்கிறது.



‘முகமூடியுடன்’

செக்ஷன்களிலே ஓடும் பம்புகள், கம்பர்சர் மோட்டார்கள், எல்லாவற்றையும் கண்குத்திப் பாம்புபோல் கவனிக்கவேண்டும். அவற்றிற்கு

எண்ணை போடுவது, கிரீஸ் போடுவது போன்ற வேலைகளை சரியான சமயங்களில் செய்வதால் அவற்றின் உழைப்புக் காலத்தை நீடிக்கலாம் என்பது எங்களுக்குத் தெரியும். கம்பர்சர் முதலிய பெரிய மிஷின்களை தப்பில்லாமல் எப்படி நிறுத்துவது, ஆரம்பிப்பது, என்பதையும் கற்றுக்கொண்டிருக்கிறோம். ஒன்றிரண்டு செக்ஷன்களிலே இவற்றைப் படம் போட்டு



‘கழுத்துக்குமேல் வேலை’

விளக்கியிருப்பது போல் எல்லா முக்கிய வேலைகளைப் பற்றியும் எல்லா இடங்களிலும் குறிப்புகள் எழுதி வைத்தால், எதிர்பாராத நிலைமை ஏற்படும் சமயங்களில், அந்தக் குறிப்புகளின் உதவியால் சமாளிக்கக் கூடும்.

எங்களுக்கு முக்கியமாக Log sheet எழுதும் வேலை இருக்கிறது. தொழிற்சாலைக்கு இதிலிருந்து கிடைக்கும் புள்ளி விவரங்கள் எவ்வளவு முக்கியம் என்பது உங்களுக்குத் தெரிந்திருக்கும். உதாரணமாக ஸெஸ் ரூயில் Effluent rate எடுப்பதைச் சரியாகச் செய்ய

வேண்டும். இதிலிருந்து தான் ‘ஸெல்’ வேலை செய்யும் தரத்தை சரியாகக் கணக்கிட முடியும்.

வேலை செய்யும்பொழுது, பைப் அடைபட்டுப்போவது, இணைப்புகளில் ஒழுக்குதல் (leaks) போன்றவை அடிக்கடி வரும் வேலைகள். இவற்றைக் கவனிப்பதற்கு C. F. M. G. ஆட்கள் இருந்தாலும் ‘நீங்களை இதை ஏன் செய்யக்கூடாது?’ என்று அவர்கள் கேட்கிறார்கள். சாத்தியமான வரையில் நாமே செய்ய முயற்சிப்பதால் C. F. M. G. மற்றும் சற்றுக் கடினமான வேலைகளை கவனிப்பது சாத்தியமாகிறது. ஆனால் ஒவ்வொரு தடவை எங்கள் வேலையே கழுத்திற்கு மேல் இருக்கும் பொழுது, இவற்றைக் கவனிக்க முடிவதில்லை.

மேலும் சில செக்ஷன்களில் இம்மாதிரி காரியங்கள் நாங்களே செய்வதற்குரிய ஸ்பானர், ரென்ச் முதலியவை வைக்கப்பட்டிருப்பதுபோல் எல்லா செக்ஷன்களிலும் இருப்பது நல்லது. அவசர வேலைகளை நாங்களே உடனுக்குடன் கவனிக்க முடியும்.

எங்களுக்கு ஒத்தாசை செய்வதற்கு ‘ஹெல்பர்’ (Helper) கொடுத்திருக்கிறார்கள். நாங்கள் கொடுக்கும் வேலையைச் சரியாகத் தான் செய்கிறார்கள். ஏன், சிலர் நாங்கள் செய்யும் வேலையைக்கூட கற்றுக்கொண்டிருக்கிறார்கள். டிபன், சாப்பாடு முதலியவற்றிற்கு வீட்டிற்குப்போகும் நேரங்களில் அவர்களிடம் தான் உபிச்சை வைத்துவிட்டுப் போகிறோம்.

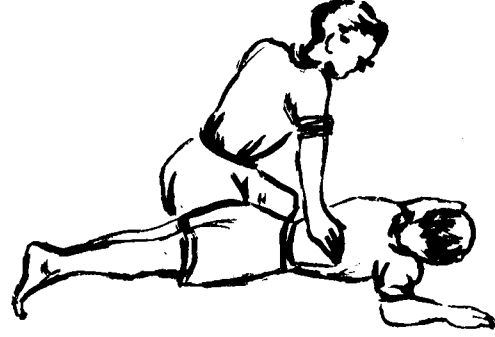
நாங்கள் உடனடியாக வேலை செய்வது ஷிப்ட் கெமிஸ்ட், செக்ஷன் சீனியர் கெமிஸ்ட் இவர்கள் கீழ்தான். முக்கியமாக ஷிப்ட் கெமிஸ்டின் தான் அதிகம் பழகுகிறோம். அனுபவமுள்ள ஆபரேட்டர்கள் என்று எங்கள்மேல் அவர்கள் வைத்திருக்கும்

நம்பிக்கையைப் பற்றி எங்களுக்கு எப்பொழுதும் ஒரு பெருமை உண்டு. அந்த நம்பிக்கைக்கு பங்கம் வராமல் நடந்துகொள்ளவே எப்பொழுதும் முயற்சிக்குறோம். வேலையில் சந்தேகம் அல்லது நெருக்கடியான சந்தர்ப்பங்களில் அவர்களுடைய ஆலோசனையைத் தான் நாடுகிறோம்.

வெளியே, வீளையாட்டு முதலியவைகளில் விசேஷ பங்கு எடுத்துக் கொள்கிறோம். சிறந்த ஆட்டக்காரர்கள் பலர் எங்களிடையே இருக்கிறார்கள். ஆனால் மேலும் மேலும் தேர்ச்சி அடைய சந்தர்ப்பம் கிடைப்பதில்லை. நம்மைவிட கெட்டிக்காரர்களோடு ஆடினால் தானே நாம் முன்னேறலாம். அப்படிப்பட்ட சந்தர்ப்பங்கள் ஒதுக்குபுறமாக இருக்கும் மேட்டூர் போன்ற ஊரில் அபூர்வம்.

அன்றாட வேலையில், சில சமயம் விபத்துகள் ஏற்படுகின்றன. டாக்டர் வருமுன், இவற்றை சமாளிப்பதற்கு வேண்டிய முதல் உதவிப் பயிற்சியை (Training in First Aid), பல வருடங்களுக்குமுன் கொடுத்த

தைப்போல் மறுபடியும் இப்போது அளித்தால் நன்றாக இருக்கும்.



‘முதல் உதவி’

தொழிற்சாலை தலைமை அதிகாரிகள் அடிக்கடி எங்களை ஒருமிக்க சந்தித்து, அன்றாட வேலைகளில் ஏற்படும் பல பிரச்சனைகளை எங்களோடு விவாதித்தால் அது எங்களுக்கு உற்சாக மூட்டி பயன் கொடுக்கும்.

சரி, இப்படிப் பேசிக்கொண்டே போகலாம் ஆனால் மணியாகிவிட்டது. வேலைக்குச் செல்ல வேண்டும், வருகிறேன்.

வணக்கம்.

எல்லா விதமான கலர் அச்ச வேலைகளுக்கும்
சிறந்த அச்சகம்

திருச்சிவப்பள்ளி யுனைடெட் பிரிண்டர்ஸ், லிரிடெட்
தெப்பக்குளம், திருச்சிராப்பள்ளி

போன் 226.

மெட்கம் செய்திகள்

திருவாங்கூர் — கொச்சி கெமிகல்ஸ்-இன் ஆரம்ப விழா :

மேட்டூர் கெமிகல்ஸ் - திருவாங்கூர் பர்டி லைஸர்ஸ் & கெமிகல்ஸ் கம்பெனிகளால் ஆல் வாயில் நிறுவப்பட்ட இந்தத்தொழிற்சாலையில் காஸ்டிக் சோடா, ஹைட்ரோ க்ளோரிக் திராவக உற்பத்தி அக்டோபர் மாத இறுதியில் சோதனை அளவில் துவக்கப்பட்டது. டிஸம்பர் 23 அன்று திருவாங்கூர்-கொச்சி ராஜ்யத் தின் தொழில், நிதிமந்திரி ஸ்ரீ P. கோவிந்த மேனன் அவர்களால் இத்தொழிற்சாலை திறக்கப்பட்டது.

ரேயன் (செயற்கைப்பட்டு) உற்பத்திக்குத் தேவையான சுத்தமுள்ள காஸ்டிக் சோடா, தினசரி 20 டன் உற்பத்தி செய்யக்கூடிய பெரிய தொழிற்சாலை இது. சில வருஷங்களுக்கு முன் மேட்டூர் கெமிகல்ஸில் இருந்த A. R. நரசிம்மனும், L. R. கிருஷ்ணமூர்த்தியும் இப்புதுத் தொழிற்சாலை நிர்வாகத்தில் இருக்கிறார்கள். இத்தொழிற்சாலை நிர்மாணிக்கப்பட்ட பின்னர், உற்பத்தியைத் துவக்குவதில் உதவி புரிவதற்காக மேட்டூர் லிருந்து K. ராஜகோபால், N. கல்யாணம், V. முத்துஸ்வாமி, M. பத்மநாபன், A. கிருஷ்ணமூர்த்தி, ஆரோக்கியசாமி முதலியோர் சென்றிருந்தனர்.

உத்தியோகஸ்தர் சங்கம் :

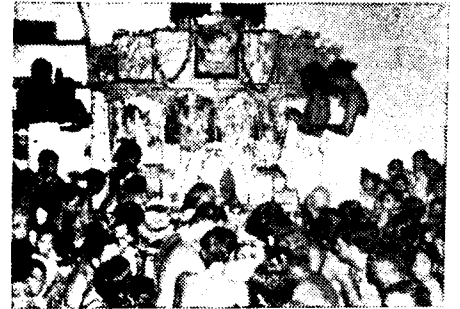
இச்சங்கத்தின் ஆதரவின்கீழ் நவம்பர் 29-ந்தேதி அன்று ஸ்ரீ ராமகிருஷ்ண ஆசிரமத்தைச் சேர்ந்த ஸ்வாமி ராகவானந்தஜி “ஹிந்து மதத்தின் கொள்கைகள்” என்னும் பொருள்பற்றி பேசினார்.

பஜலை சபையும் :

ஸ்ரீ கிருபாணந்தவாரி ‘முத்தைத்தரு’ என்பது பற்றி நவம்பர் 20 அன்று உபன்யாசம் செய்தார்.



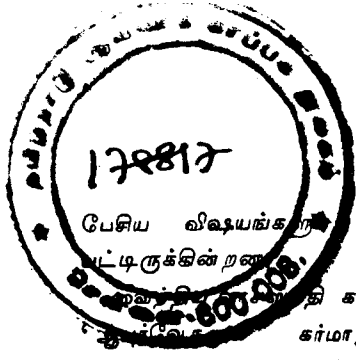
கெமிகல்ஸ் பஜனை சமர்ப்பித்தனர் மார்க்கி மாத பஜனை இறுதி நாளன்று சுவர்வலம் வந்தனர்.



ராதா கல்யாண மகாநரசிம்ம்: கெமிகல்ஸ் பஜனை சமர்ப்பித்தார் ஜனவரி அன்று நிறப்பாகக் கொண்டாடினார்கள்.

வேத தீப சாஸ்திர பரிபாலன சபையின் மேட்டூர் சம்மேளனம் :

இந்த சம்மேளனம் கெமிகல்ஸ் பள்ளிக்கூட கட்டிடத்தில் நவம்பர் 28, 29, 30 தேதிகளில் நடைபெற்றது. மேட்டூரிலிருந்தும் சுற்றுப்புறங்களிலிருந்தும் அனேகர் இதில் கலந்து கொண்டனர். இந்த சம்மேளனத்தில் பேசிய பெரியோர்களுடைய பெயர்களும், அவர்கள்



பேசிய விஷயங்களுக்கீழே கொடுக்கப் பட்டிருக்கின்றன. அவற்றுள் கருர் ஸ்ரீ ராமசர்மா, கர்மானுஷ்டானங்களும், வித்வான் குண்டலம் ஸ்ரீ V. ரங்காச்சாரியார்,



கெமிகல்ஸ் வேத் பாடசாலையின் வருஷ பூர்த்தி கொண்டாட்டத்தின் போது ஸ்ரீ குண்டலம் ரங்காச்சாரியார் அவர்கள் ஜனவரி 16, 17, 18 தேதிகளில் உயன்யாசம் செய்தார்கள்.

‘ஸதாசாரம்’ ‘வைதிக தர்மம்’ (நெரிஞ்சிப் பேட்டை) ஸ்ரீ N.K. வெங்கட்ரமண சாஸ்திரிகள் ‘விவாஹ மந்த்ரங்கள்’. (ரிடையர்ட் ஜட்ஜ்) ஸ்ரீ L. S. பார்த்தசாரதி அய்யர் ‘மனுதர்மம்’ (கொத்தங்குடி) ஸ்ரீ மகாதேவ சாஸ்திரிகள் ‘ஆஹார நியமங்கள்’ ‘ஸ்திரீ தர்மம்’ (போலகம்) ஸ்ரீ ராமா சாஸ்திரிகள் ‘கிருஹஸ்த தர்மம்’ ‘கீதாஸாரம்’.

ஆரம்பப் பள்ளிகளின் விளையாட்டு விழா : மேட்டூர் அணை ஆசிரியர் சங்கத்தாரால் நடத்தப்படும் விளையாட்டு விழா இவ் வருஷம் ஜனவரி மாதம் 18-ந்தேதி யன்று கெமிகல்ஸ் கிரிக்கெட் மைதானத்தில் நடைபெற்றது. மேட்டூரிலிருந்தும் சுற்றுப்புறங்களிலிருந்தும் சுமார் 320 சிறுவர் சிறுமியர் இந்த விழாவில் கலந்துகொண்டனர். டிஸம்பர் 52ல் இந்த விழா நடைபெற வேண்டிய தினம்; மழையின் காரணமாக தடைபட்டு, பெற்றோர்களின் வேண்டுகோளின் பேரில் மறுபடி கொண்டாடப்பட்டது.

விழா ஆரம்பத்தில் ஸ்ரீ S. ராமஸ்வாமி, B. Sc., (Hons). அவர்கள் கொடியேற்று வித்தார். ஸ்ரீ R. நடராஜன், B.Sc. அவர்கள் இவ்விழாவுக்கு தலைமை வகித்து, இவ்விழாவின் நோக்கங்களையும், பயன்களையும் விரிவாக எடுத்துரைத்தார். ஆசிரியர் சங்கத்தின் தலைவரும், ஓமலூர் வட்டாரப் பள்ளிகளின் டெபுடி இன்ஸ்பெக்டர் ஸ்ரீ M.V. அங்கண்ணையாடு, B.A.L.T. அவர்கள், பள்ளிகளில் விளையாட்டின் அவசியத்தைப் பற்றியும், குழந்தைகள் குதூசலமாக இருக்கவேண்டியது பற்றியும் பேசினார்.

இவ்விழாவில் சேர்ந்துகொண்ட சிறுவர் சிறுமியர் அனைவரும், ஆசிரியர் ஸ்ரீ D. W. ஜேம்ஸ் அவர்களின் மேற்பார்வையில், விதவிதமான விளையாட்டுக்களை நடத்திக் காட்டினார்கள்.

இறுதியில் பெற்றோர்கள் சார்பில் ஸ்ரீ T. S. சுப்பராவ், B. Sc., அவர்களும், ஸ்ரீ V. சுவாமிநாதன் அவர்களும் பேசினார்கள். பின்னர் ஸ்ரீ K. ராஜகோபால், B.Sc., (Engg.) அவர்கள் குழந்தைகளுக்கு தின்பண்டங்கள் வழங்கினார். கெமிகல்ஸ் பள்ளிக்கூட தலைமை ஆசிரியர் ஸ்ரீ M.V. சுப்ரமணியம் இவ்விழாவை நடத்த உதவி புரிந்த அனைவருக்கும்,



ஆரம்ப ஆசிரியர்களின் விளையாட்டு விழா

பங்கெடுத்துக் கொண்ட அனைவருக்கும் வந்தனோபசாரம் கூற, விழா இனிதே முடிந்தது.

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