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*In this Issue*

ALUM ● THE STORY OF FERTILISERS ●  
CHEMICALS IN MODERN LEATHER MANUFACTURE  
AND  
OTHER USUAL FEATURES.



*Cover Photo*

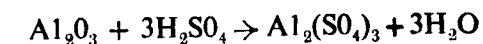
Prof. B. M. DAS addressing the Society of Technologists.

## ALUM

**I**N common usage, 'alum' refers to hydrated aluminium sulphate, though in chemical terminology, the term is used to refer to a group of double salts like potassium-aluminium-sulphate and ammonium-aluminium sulphate. The single salt aluminium sulphate has become so pre-dominant in industry because of its wide applications, that it has come to be popularly referred to as alum.

Historical evidence has it that alum, in the form of double salts occurring as minerals in nature, was employed by the Egyptians and Romans as a mordant in dyeing, and for making leather supple and more durable. For several centuries now, alum has been used for imparting water-resistant properties to paper and parchment, in the purification of water, and in the treatment of sewage and industrial water. The method of manufacturing the single salt aluminium sulphate was discovered by Spence and Pochin in England, in 1855, and since then, its applications have vastly developed.

*Method of making and Properties:* Aluminium sulphate is made by boiling finely-powdered bauxite, an alumina (aluminium oxide) ore, with concentrated sulphuric acid in large digestors lined with lead. After purification, the aluminium sulphate solution is drawn off, concentrated and allowed to solidify. The solid mass is then broken up and ground or powdered as required. For obtaining an iron-free grade of alum, purified alumina hydrate is employed at the start.

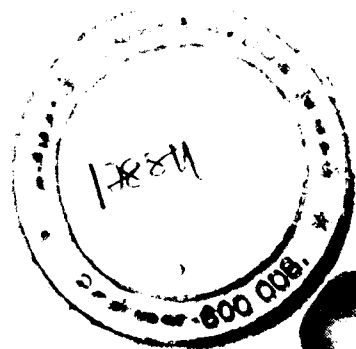


Hydrated aluminium sulphate has the formula  $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$ . The commercial grade of alum is partially dehydrated, and is therefore, slightly hygroscopic. It is quite stable under ordinary conditions of storage. When dissolved in water, it hydrolyzes to form an acid solution. It reacts with alkalis and alkaline earths to form aluminium hydroxide. This aluminium hydroxide can be reacted with an acid, such as sulphuric, to form aluminium sulphate, or with an alkali such as sodium hydroxide to form sodium aluminate. This amphoteric property of aluminium hydroxide and its occurrence as a flocculent gel enable its wide applications in industry and everyday life.

*Applications:* In water treatment, alum is the most important chemical used. It coagulates suspended and colloidal matter in water and the heavy particles rapidly settle out while any suspended matter is removed by passing the water through sand filters.

In the treatment of sewage and industrial effluents also, alum is used to coagulate suspended and colloidal matter and facilitate the removal of the sludge. Alum is further used to condition this sludge for rapid drying on sludge-beds or vacuum filters.

In the paper industry again alum is used for the setting of paper-sizing agents, and for controlling the pH of the stock in the beater. It is used as a mordant in dyeing, and in the manufacture of printing inks. In the leather industry, it is used in conjunction with other tanning agents to produce white leathers. In deodorant preparations, it is used as an astringent. Glass and rubber industries also need alum. In the preparation of aluminium salts and double salts, alum again finds application.



In a general sense, the term "fertiliser" includes any material that is used to aid the growth of plants and increase the yields of crops; but, in agricultural practice, the term is restricted to mean materials artificially prepared or those that may be obtained in the market for supplying plants with nutrient elements, principally nitrogen, phosphorus and potassium. The term "manure" is commonly used to designate organic materials such as farmyard or stall manures, composts or artificial farm manures.

## The Story of Fertilisers

by

K. V. RAMACHANDRAN, B. Sc.

Manures were used in agriculture probably several centuries before chemical and commercial fertilisers were known. Archaeological research has shown that cultivation of the soil for production of food crops began as early as the neolithic age. Recent findings in Palestine would show that agricultural pursuits were followed by

the Natufians in Palestine and the Near East over 20,000 years ago.

The principal materials commonly used to increase soil productivity are stall manures, green manures, crop residues, commercial fertilisers and agricultural limes. Commercial fertilisers are fertilising materials that have become articles of commerce. Chemical fertilisers are commercial fertilisers prepared through chemical processes. Agricultural limes improve soils in other ways besides supplying available calcium and magnesium.

French peasants have a saying to the effect, "A fall of snow in February, is worth a pile of manure". Snow is called the "poor man's manure" in several western countries. The French Scientist Jacques showed in 1920 that snow in France is always richer than rain in both nitric acid and ammonium. This however may not be the case everywhere.

**Plant nutrient elements:** Water, carbon-di-oxide, nitrogen, phosphorus etc., constitute the raw materials out of which plants manufacture their foods. Increase in plant growth may be effected by applying any of these materials when the fertility of the soil is limited. Anything that may limit plant growth because of deficiency, absence, or unfavourable conditions may be regarded as a limiting factor in crop production. It may be filth, moisture, soil aeration, soil reaction, organic matter or micro-organisms.

When all factors are favourable, maximum yields result; but if one is deficient the yield gets reduced. Available nitrogen and available phosphorus are commonly limiting ele-

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ments. Furthermore, what may constitute a major limiting factor for one crop may not necessarily be so for another, say, for instance, soil acidity.

Fertilising a crop does not mean simply incorporating into the soil a certain material on which the plants are to feed. On the contrary, adding fertilisers to a soil results in physical, chemical and biological actions and reactions.

In-as-much-as decline in crop yield results in the main, from one or more the following :

- (1) destruction of soil organic matter,
- (2) decrease of available nutrient elements,
- (3) development of soil acidity,
- (4) destruction of favourable soil structure and
- (5) soil erosion

the maintenance of soil productivity depends on :

- (1) maintaining adequate supplies of organic matter,
- (2) rational use of proper fertilising materials,
- (3) proper adjustment of soil reaction,
- (4) maintaining favourable physical condition of soil materials and
- (5) control of soil erosion.

**Development of fertiliser practice:** Although the use of farm manures is as old as agriculture, scientific fertilising began only until after Lawes, the great English Chemist began the manufacture of chemical fertilisers in 1843. England was for many years the principal producer of superphosphate, sulphate of ammonia and natural nitrate

of soda because she was the largest user of coal and had the largest interests in the nitrate fields of Chile.

The first commercial fertilisers in U. S. A. were manufactured in 1849.

Between 1804 and 1844, the works of De Saussure, Leibig, Lawes and Gilbert and others on nutrition of plants and fertilising materials, supplied the basis for the classification of fertilising materials in the following manner :—

- (a) Organic fertilisers,
- (b) Nitrogenous fertilisers,
- (c) Phosphatic fertilisers,
- (d) Potash fertilisers,
- (e) Mixtures—called "mixed" or "complete" fertilisers are looked into in a succeeding paragraph.

**Organic fertilisers:** Most important in this class are farmyard manures consisting of solid and liquid excretions of farm animals with more or less bedding material and other litter. These have certain properties that are not shared by many chemical fertilisers. About 54 per cent of the total nitrogen in the manure and 60 per cent of the potassium are contained in the liquid excrement. The excrement from one cow contains about 10 to 12 lbs. of nitrogen per ton. If it is allowed to stand for a few days, about half the nitrogen gets converted to ammonia. Straw is a good absorbent bedding material.

Manures are not used immediately after they are made, but are stored for sometime before incorporation into the

soils. During the storage period they suffer mechanical losses, volatilization losses, etc., and undergo chemical changes, mainly oxidation, resulting in loss of organic matter and nitrogen. Losses are least when the manures are tightly dumped in pits with as much water as they can hold.

Reinforcing the manure with 25 to 40 pounds of superphosphate or 40 to 80 pounds of rock phosphate per ton increases the fertilising efficiency, especially on soils which are deficient in available phosphorus.

The residual effects of farmyard manures on soil persist for several years. Generally about half the nitrogen in the manure is rendered available during the first year, and a quarter of the phosphorus and potassium is used up.

Artificial farm manures are prepared by composting straw by treatment with ammonium sulphate and pulverized limestone and adding water sufficient to effect quick decomposition. Activated sludge produced by forcing air through sewage containing 5 to 6.5 per cent of nitrogen and less than 1 to 1.7 per cent of phosphorus is also used as an artificial farm manure.

**Nitrogenous fertilisers:** These fertilisers may be classified as:—

(1) Nitrates containing nitric nitrogen like sodium nitrate and calcium nitrate.

(2) Ammonium salts containing ammoniac nitrogen like ammonium sulphate;

(3) Compounds containing nitric and ammoniac nitrogen like ammonium nitrate;

(4) Compounds containing other forms of nitrogen which give rise to ammonium ions on decomposition, such as calcium cyanamide  $[\text{Ca}(\text{CN})_2]$ , and urea  $[\text{CO}(\text{NH})_2]$ .

Until the year 1918, the principal nitrogenous fertilisers were natural sodium nitrate and by-product, sulphate of ammonia. The extensive development of the nitrogen fixation industry has resulted in an enormous increase in the world production of nitrogenous fertilisers.

Chemical fixation of atmospheric nitrogen consists in combining nitrogen with other elements to render it available for commercial use. This may be accomplished by any one of the following three processes.

**Electric arc process:** The arc process consists in partial conversion of nitrogen and oxygen at high temperatures into nitric oxide, cooling the nitric oxide in the presence of oxygen forming nitrogen peroxide, which, when absorbed in water, yields nitric acid.

Birkeland and Eyde completed their arc-process, nitrogen-fixation factory at Notodden in Norway in 1905. The Norway products are calcium nitrate, sodium nitrate, sodium nitrite and nitric acid.

**Cyanamide process:** This process consists in bringing atmospheric nitrogen in contact with finely pulverized calcium carbide, heated to 1000 deg. C., resulting in the formation of calcium cyanamide.

When it was found that this compound might be used directly as a

fertiliser, its production was encouraged rapidly and more than 40 factories were erected, in thirteen countries, with a total annual capacity of 4,60,000 tons of nitrogen. Improvements in this process by German and French chemists indicate the possibility of producing calcium cyanamide without the intermediate production of calcium carbide.

**Synthetic ammonia process:** Direct synthesis of ammonia is accomplished by passing compressed gaseous mixture of one volume of pure nitrogen and three volumes of pure hydrogen over a catalyst (ferrous oxide) at a high temperature. This is the most modern method developed by Haber and Bosch who put into operation a pilot plant in Germany in 1913. Seventy-five such factories have been erected in seventeen countries with a total capacity of 1,700,000 tons of nitrogen up to the year 1929. It has been estimated that the air over each square mile of earth's surface contains as much as 20,000,000 tons of elemental nitrogen.

**Nitrogen as by-product:** In coking, the nitrogen in coal gets distributed between the products coke, tar and gases. The gases are the only valuable source of by-product nitrogen; the nitrogen is present as ammonia and is recovered by washing the gases with water or sulphuric acid, resulting in the formation of ammonium sulphate.

**Phosphatic fertilisers:** The principal fertilising agent in phosphatic materials may be phosphorus, phosphorus pentoxide or phosphoric acid.

Superphosphate was the first artificial fertiliser made. It is made by treating ground rock phosphate with sulphuric acid to convert insoluble

calcium fluoro phosphate  $3\text{Ca}_3(\text{PO}_4)_2$   $\text{CaF}_2$  into available or water soluble mono-calcium phosphate, forming in addition calcium sulphate and a small quantity of di-calcium phosphate.

Superphosphate was patented by Lawes in 1842. Double and treble superphosphates are recent products containing from 40 to 45 per cent phosphorus pentoxide. They are made by treating rock phosphate with liquid phosphoric acid. The process is carried out in two stages, first with weak sulphuric acid and then with phosphoric acid.

It was thought that lime would revert superphosphate and decrease its fertilizing value. Several investigations have shown that the effectiveness of superphosphate is not impaired when pulverized limestone is mixed with it.

Superphosphates are used for cereal crops, cotton, corn and potatoes and are essential for acidic soils and heavy clays.

**Potash fertilisers:** Leibig laid considerable emphasis upon the nutritive values of "salts of alkalis", but it was only after 1852 that Lawes and Gilbert showed by field experiments that potassium had the greatest value in plant nutrition. It is estimated that the oceans, enormous reservoirs of potassium salts, contain as much as 1,141,000 million tons of potassium sulphate.

All potash salts are water-soluble and the potassium in them is readily available. Potassium chloride is the most abundant.

Lyon and Conorkers found in 1930 that the application of potassium sulphate resulted in removal of calcium and magnesium in the drainage waters and hence an unnecessary use of potash

fertilisers may cause considerable loss of these two important basic elements from the soil.

**Mixed and concentrated fertilisers :** These are mixtures of different fertilising materials containing either two or three of the major nutrient elements. Mixtures that carry all the three elements nitrogen, phosphorus and potassium are called "complete" fertilisers.

Mixed fertilisers are evaluated on the basis of their analysis and in terms of available nitrogen-phosphorus pentoxide-potassium oxide ratio.

Mixing is done either dry or wet. Dry mixing is simple. In wet mixing, organic by-product materials are mixed with rock phosphate and the whole mass is treated with sulphuric acid.

The different materials that are mixed together must be chemically compatible so as to effect proper chemical and physical conditions, prevent loss of nitrogen and prevent reversion of soluble phosphorus compounds to complex or insoluble forms.

**Concentrated fertilisers:**—The following are the most common types of concentrated fertilisers :—

Ammoniated superphosphate—produced by treating dry superphosphate with synthetic ammonia.

Mono-ammonium phosphate—made by neutralizing phosphoric acid with ammonia.

Ammophos—made by adding ammonia to a mixture of sulphuric acid and phosphoric acid.

Diammophos—Combination of Ammonia and phosphoric acid.

Leunaphos—Made by mixing diammonium phosphate and ammonium sulphate in the ratio 2 : 3.

The advantages in producing or employing concentrated fertilisers are reduction of bulk, reduction in transportation charges, and requirement of less storage space and reduced labour costs. However in the matter of distribution and use, improved methods of application are found necessary.

**Choice of fertiliser :** Nitrogen fertilisers are to be used for soils containing adequate calcium and magnesium. Choice of the phosphate fertiliser depends on the availability of phosphorus: superphosphates are used for immediate results. On irrigated soils of arid regions, the use of ammonium phosphate is advisable when an extra supply of nitrogen is needed to balance phosphorus.

The choice of potassium fertilisers is based on economy, and a knowledge of the effects produced on crops concerned.

Economy is usually an important factor affecting the choice of fertilisers regarding both purchase, price and net returns. Due consideration should also be given to the permanent effects that the fertilisers may have on the soils.

#### **Application of fertilisers :**

Manures and fertilisers may be spread over and incorporated into the seed bed by harrowing, or dissolved and applied as solutions or mixed in with the irrigation water. They may also be applied as side-dressing—that is, applying easily soluble fertilisers along one side of the rows of inter-tilled crops after the plants are up or they may be sprinkled over as top-dressing.

## ***Chemicals in Modern Leather Manufacture\****

**I**N manufacturing leather, the hides and skins obtained from the carcasses of dead domestic animals such as cows, buffaloes, sheep and goats are, after curing, put through different operations. These operations are technically known as soaking, liming, deliming, bating, drenching, pickling, tanning, bleaching, dyeing, fat-liquoring and finishing. Soaking achieves washing as well as restoring the water lost in curing by salting or drying. Liming achieves the removal of hair which is not wanted for leather manufacture and also helps to swell and plump the hides and skins and split up their fibre bundles into fibres, and the fibres into fibrils so that the tanning agent may coat entirely the fibres and fibrils and effect a thorough tannage. The swelling effect on hides and skins in liming also enables the tanner to produce thick leathers such as those for sole, belting, harness, etc. The deliming operation removes the lime from the pelts. (Limed hides and skins are technically called 'pelts'.) Bating removes the protein matter between the fibres and is done with a view to the production of soft and supple leather and also to produce a leather having a smooth and clean top surface, technically called 'grain.' The tanning operation converts the perishable and ephemeral raw hides and skins into imperishable and permanent leather. The tanned hides and skins are then dyed to produce leathers of different

colours. After dyeing, they are treated with an emulsion of fat by a process called fat-liquoring. All leathers are not dyed—for instance, leathers for sole, belting, harness, etc., with the exception of sole leather. The other types are treated with fat by a process known as currying. The dyed leathers which are used for shoe uppers, travel goods, and for making various fancy leather goods are finished. This process consists in applying leather finishes or seasons and then glazing by machine. The glazed leathers are hot-plated to produce on them an ironing effect. Many types of leathers are embossed to produce on them artificial grains of different attractive designs.

#### **USE OF CHEMICALS**

In all these operations, chemicals are used for producing the desired effects on hides and skins. In curing, common salt is chiefly used. Common salt or sodium chloride may be of different origins—namely, sea-salt, rock-salt and salt from lakes. Sea-salt is made in the coasts of India at various places; rock-salt is obtained from the salt mines of Khewra in the Punjab; lakesalts are obtained from Sambhar Lake and from the Didwana lakes of Rajasthan. All these types of salts are used in practice in curing hides and skins in India. Generally, any type of common salt available is being used in curing; however it

Summary of an address to the Society of Technologists by Prof. B. M. Das, Director, Central Leather Research Institute, Madras.

is found that sea-salt suffers from a disadvantage because chromogenic bacteria known as red-heat develop in it. The salt used should not normally contain more than 1 per cent of chlorides and sulphates of calcium and magnesium for the best results. Curing may be done in three different ways, wet-salting, dry-salting and air-drying. In wet-salting, sea, rock and lake salts are used.

To fortify the preserving action of sodium chloride, chemicals like sodium silico-flouride, zinc chloride, sodium flouride, zinc oxide, zinc carbonate, zinc phosphate, zinc sulphate, cadmium chloride, lead chloride, copper and bismuth salts, mercuric perchloride and many phenolic substances have been added, but none of these has as yet proved entirely satisfactory. Many of these additions increased the preservative effect of common salt no doubt, but affected the quality of the final leather.

Zinc chloride was often used a few years ago in India to prevent hair-slip of wet-salted hides during transit by rail in summer from North to South India. A 2 to 5 per cent solution of it was brushed on the flesh side of salted hides which were finally rubbed again with salt. This treatment prevented hair-slip but the hides thus cured with zinc chloride presented difficulty in un-hairing.

Sodium carbonate or soda ash is added to sodium chloride for curing hides and skins. About 3 per cent sodium carbonate on the weight of the salt is used. This addition prevents salt stains on hides and skins cured with common salt. This defect

is caused either by iron salts present in the common salt or by bacteria.

### SOAKING

There is no difficulty in soaking wet-salted hides and skins, but hides cured by dry-salting or drying present considerable difficulty. Water penetrates the horny dry hides and skins so slowly that bacterial action sets up and damages the hides and skins under soaking. To prevent such action, antiseptics like industrial chlorine, bleaching powder, carbolic acid etc., are useful, specially in summer. The penetration of the water is helped by the use of wetting agents, like sodium salts of sulphonc acids or sulphated fatty alcohols.

### LIMING

Lime, either slaked or unslaked, is used for liming. Before using, unslaked lime must be slaked. Stone limes are commonly used in northern India. The total quantity of lime estimated to be used by the tanning industry is 25 to 30 thousand tons annually.

Although lime loosens the hair and swells the pelt, its action is rather slow, especially in winter. In places like the Punjab where winter is very severe, it takes about three weeks to loosen the hair if lime alone is used. Even in summer, hair cannot be loosened in less than six or seven days and for plumping the hides suitably, a longer treatment is necessary. In order to quicken unhairing, other depilants like sodium sulphide ( $\text{Na}_2\text{S}$ ) sodium hydrosulphide ( $\text{NaHS}$ ), arsenic sulphide (red arsenic),

( $\text{As}_2\text{S}_3$ ) are used. The use of sodium sulphide is most common. Formerly it used to be imported. Now it is made in India to some extent, but the quality of the Indian product is not equal to the imported article. Sodium sulphide is marketed in two forms, fused and crystalline. The fused variety is of 60 to 62 per cent  $\text{Na}_2\text{S}$  content. The crystalline variety is of 32 per cent  $\text{Na}_2\text{S}$  content and has got the formula,  $\text{Na}_2\text{S} \cdot 9\text{H}_2\text{O}$ . In India, only the fused variety is preferred. About 700 tons of sodium sulphide is estimated to be the annual requirement of the Indian tanning industry. It has been proved now that sodium hydro-sulphide ( $\text{NaHS}$ ) is a better un-hairing agent than sodium sulphide, because it swells the pelt less than sodium sulphide, thereby producing a smoother and mellower leather. Sodium hydro-sulphide, however, is not yet made in India. Research is being carried out at the Central Leather Research Institute for working out a suitable process for its manufacture. Red arsenic or arsenic sulphide is used mostly for the production of very fine leather like glazed kid from goat-skins. It is not much used in India as it is a poisonous substance and involves risk to tannery workers. Other chemicals used in liming are calcium chloride and sodium chloride.

### DELIMING

Liming over, the hides and skins have to be delimed. For this purpose, acids which form soluble lime salts can be used. But, as strong acids have objectionable swelling effect on the pelt, they are not generally employed by tanners.

Weak acids are preferred. Among these, boric acid is the favourite deliming agent because its action is so mild that boric acid solution can be dropped into one's eyes without hurting them. About 1,000 tons of boric acid is estimated to be the annual requirement of the Indian tanning industry. Next to boric acid, lactic acid and acetic acid are used as they form soluble lime salts. Ammonium salts like ammonium chloride and ammonium sulphate are also used because they react with lime forming soluble lime salts and evolving ammonia. They have no harmful swelling effect on the pelt. The use of ammonium salts for deliming is increasing.

### BATING

Bating is nowadays done by the enzyme products which are known as synthetic bates. They are composed of enzymes like trypsin and steapsin or lipase. Trypsin is a protease which dissolves certain kinds of protein, specially mucin, which is present as an inter-fibrillary substance. The principal object of bating is to dissolve this inter-fibrillary matter which is chemically the conjugated protein mucin or gluco protein, which is effected by the proteolytic action of trypsin. The associated enzyme, lipase, is a fat-splitting agent. It removes the natural fat of the pelt. Bating is essential for the production of soft, pliable and fine, clear, grained leather. In synthetic bates, these enzymes are mixed with either ammonium chloride or ammonium sulphate. These ammonium salts act upon any lime that may

have still remained in the pelt and also energises the action of the enzymes. Enzymes were formerly derived from animal pancreas, but now as animal pancreas is used in the preparation of medicines, it is not available for use in the tanning industry. The enzymes required for making synthetic bates are now derived from plant sources or from mould. Intensive research is being carried out at the Central Leather Research Institute on enzymes from plant sources and from moulds. Enzymes have been obtained from the latex of madar plant (*Calotropis gigantea*) and also from vegetable sources like *ragi*. A product has been worked out from madar enzymes which has the double action of unhairing and bating in one bath. The production has been patented. Researches are in hand to prepare commercial synthetic enzyme bates from moulds and plant latex. At present, synthetic bates to the extent of 60 tons are annually reported to be imported for the consumption of the Indian tanning industry.

### PICKLING

When the hides and skins are bated, and if they are meant for chrome-tanning by the one-bath process, they have to be pickled. For pickling, sulphuric acid and common salt are used. Generally, commercial sulphuric acid is bought by tanners. Annual consumption of the tanning industry is about 1,500 tons. This is of 1.75 specific gravity, and having 80 percent  $H_2SO_4$  strength. Pickled pelts are often exported in the pickled condition in which case they have to be kept for a long time before they are tanned. In this storage, mildew

grows in the pickled skins. To arrest mildew growth, a chemical known as paranitrophenol is used in the pickling bath.

### VEGETABLE TANNING

Leathers like sole, harness and belting and the large amounts of leather tanned in South India for export are all tanned by the vegetable tanning process. The E. I tanned kips and skins of South India are practically all exported and they fetch to India annually about Rs. 25 crores. It is one of the most valuable of Indian industries. In vegetable tanning, the principal material used is vegetable tan-stuff. Both indigenous and imported tanstuffs are at present used. Among the indigenous tanstuffs, the barks of *avaram* (*Cassia auriculata*) are very important. It is available in large quantities in South India. The barks of *konniam* (*Cassia fistula*) are also much used. The imported bark, wattle, too, is used to a very large extent. About 30,000 tons of imported wattle bark and its extract are annually used. Tanning extracts are often treated with sodium sulphite and sodium bi-sulphite, after which they are known as sulphite extracts. The object of sulphiting is to solubilise the insoluble and difficult soluble components of the tanning extracts and also to estimate bleaching action on the tanning extracts, thereby producing a paler coloured leather which is very much liked in the trade. Another chemical which is much used is magnesium sulphate or Epsom salt. This is used to increase the weight of the leather, as leathers are sold by weight. The use of Epsom salts by the South Indian tanning industry has resulted in

an objectionable malpractice to which naturally exception has been taken by Europe and America, and to which countries leathers are exported.

Many chemicals are used for bleaching vegetable-tanned leather. Among these, the most important is oxalic acid. Some varieties of synthetic tanning materials are also used for bleaching.

While discussing vegetable-tanning, it will be appropriate to make mention of synthetic tanning materials which have now been introduced to the tanning industry. The synthetic tanning materials are made from coal-tar distillation products like phenol, cresol and naphthalene by the process of sulphonation with sulphuric acid and condensation with formaldehyde principally. A variety of synthetic tanning materials is being manufactured in Germany, England and America. Some of these materials are coming to India for use. Research has been carried out on the synthetic tanning materials at the Central Leather Research Institute and about 40 synthetic tanning materials have been prepared on a laboratory scale which are awaiting pilot-plant trials for commercial exploitation. These synthetic tanning materials are mostly used in conjunction with vegetable tanning to produce certain desirable results in the tanning operations, and also on the quality of the final leather. These are known as auxiliary syntans. Syntans have also been made which can tan independently without the admixture of vegetable tan-stuff. These are called exchange syntans. In Germany, while during the war there was a great shortage of natural vegetable tanning

materials, synthetic tanning materials supplemented the use of natural tanstuffs to a very great extent. A similar situation now exists in India where the supply of the vegetable tanning materials is running short. Supplementation of vegetable tanning materials by synthetic tanning materials is a desirable end, and a new chemical industry to manufacture synthetic tanning materials seems, therefore, called for.

### CHROME-TANNING

Chrome-tanning is a chemical process. Tanning is effected by basic chrome sulphate ( $CrOHSO_4$ ). Basic chrome sulphate is made by reducing bichromate of soda acidified with sulphuric acid with a suitable reducing agent. In India, basic chrome sulphate for tanning is usually made by reducing a mixture of sodium bichromate and sulphuric acid with molasses. A large quantity of bichromate is consumed by the Indian tanning industry for chrome-tanning, because the largest variety of leather—namely, the shoe upper leather both for civilian and military use is made by chrome-tanning. This shoe upper leather is made by tanning cow-hides by the chrome-tanning process. Formerly, the bichromate required in the tanning industry used to be imported. Now bichromate is being manufactured in India from Indian chromite. The annual consumption of sodium bichromate by the Indian tanning industry is estimated at 1,200 tons. After tanning, chrome leather has to be neutralised to remove the free sulphuric acid absorbed by the leather from the chrome liquor. This neutralisation is done most commonly by borax.

### DYEING

The neutralised chrome leather as well as the vegetable tanned leather are dyed to different popular shades of colour. For dyeing, aniline dyes are principally used. Consumption of dyes in the Indian leather industry is estimated at 125 tons annually. Most of the dyes used in the tanning industry are imported. A beginning has, however, been made in the manufacture of aniline dyes in India, and this industry needs rapid expansion to make India self-sufficient for dyes.

### FAT-LIQUORING

Dyed chrome leather is fat-liquored; that is, neutralised leather is treated with an emulsion of oil in water. Fat-liquors are chemical products made by sulphating animal oils like fish oil or neats-foot oil. The sulphated oils are neutralised either by ammonia or sodium carbonate to a pH value of 7. For impregnating fats into vegetable-tanned leather like harness, saddlery or belting, a mixture of tallow and fish oil is used. Treating with this mixture is technically called 'dubbing'. The process of fat impregnation is technically called 'stuffing'. The annual consumption of tallow by the Indian tanning industry is estimated at 1,000 tons.

For making fat-liquors as well as for dubbing, for oiling up sole and other leathers, and for making chamois leather, a plentiful supply of fish oil is necessary. The annual consumption of fish and vegetable oils by the leather industry is estimated at 4,000 tons. The supply of fish oil both from Newfoundland and Madras coast is not able to meet the demand. A

situation has been created which is similar to that with which Germany was confronted during the last war, and to meet which the German chemists carried out research and synthesised leather oils from fractions called 'kogasines' obtained in the Fischer-Tropsche Process of benzene manufacture. Kogasines are aliphatic hydrocarbons of the  $C_{15}$  to  $C_{20}$  series. A product called 'immergan' was made by sulphochlorinating kogasine. It is necessary to make synthetic oils in India also, but as the Fischer-Tropsche process of benzene manufacture has not yet been introduced in this country, kogasine is not available to us as raw material for making synthetic leather oils. In place of kogasine, petroleum products like kerosene, diesel oil, etc., can be used. Intensive research is being carried out at the Central Leather Research Institute for making synthetic leather oils from these materials. Results so far have been very encouraging. A leather oil has been produced and also a sulphochlorinated kerosene oil has been made which can be used to produce chamois leather. This is a new line open to the chemical industry.

### FINISHING

In leather-finishing, various products are used. The principal ones are water pigment finishes, and nitrocellulose pigment finishes. Water finishes based on casein have been in use for a long time and they are prepared by dissolving casein with either ammonia or borax and mixing in finely powdered pigments and a preservative like parachlorometacresol or carbolic acid. Nitro-cellulose pigments or 'lacquers' are made by adding pigments to a solution of nitro-cellulose

in suitable solvents like acetone or amyl alcohol. The annual consumption of water and nitro-cellulose pigment finishes is reported at 150 tons. In leather finishing, other products like egg albumin, blood albumin, gum tragacanth, linseed mucilage, Irish moss etc., are required. The nitro-cellulose pigments are much used for making upholstery leather for motor cars because the pigments are made fast to dry and wet rubbing, by the protective action of the nitro-cellulose film.

Besides vegetable and chrome tanning, there are aluminium, zinconium and formaldehyde tannings for which alum, basic aluminium and zinconium salts and formaldehyde are needed. Their manufacture in India on an adequate scale is necessary.

### LEATHER BOARDS

Attempts are being made to manufacture leather boards from leather shavings. For this, synthetic resins or rubber latex are used as adhesives. Two German products called aeronal and mowilith are found efficient. The former is a polyvinyl acetate and the latter is methyl methacrylate. Intensive research is now being carried out at the Central Leather Research Institute in the manufacture of leather boards.

From what has already been said, it will be realised that the progress of the leather industry in India is intimately connected with the progress of our chemical industry. New branches of chemical industry have to be developed for the manufacture of chemicals for the leather industry, usually called leather auxiliaries. In Europe and America, the leather auxiliary industry has been enormously developed. There are factories

which specialise in manufacturing such tanning agents as vegetable-tanning extracts, synthetic tanning materials, and chrome-tanning agents. There are other factories which have specialised in making fat-products like fat-liquors needed by the leather industry. In India, as yet the manufacture of leather auxiliaries is non-existent with the result that every tannery has to make its own requirements such as tan-liquors, chrome-liquors, fat-liquors, finishing materials, etc. The making of these materials is not the tanner's job, but it is of chemical factories. They should open sidelines for the manufacture of the various leather auxiliaries indicated above. Depilants, synthetic bates, vegetable tanning extracts, syntans, mineral tanning agents, commercial fat-liquors and various leather finishes should be manufactured in India to make her self-sufficient in this field also.

In manufacturing these chemical auxiliaries for the leather industry, the Indian chemical industry will get sufficient help from the researches which are being intensively conducted at the Central Leather Research Institute. Valuable data for the manufacture of depilants, synthetic bates, syntans, synthetic tanning oils and fats, mineral and vegetable tanning extracts, commercial fat-liquors and pigment finishes have already been collected by research at the Central Leather Research Institute. The Indian Chemical Industry is invited to exploit these researches of the Central Leather Research Institute commercially with a view to enlarging its field and also helping to make the leather industry, both strong and self-sufficient.

## BOOK Reviews

**TECHNICAL AID TO FOOD INDUSTRIES—**  
Published by the Central Food Technological  
Research Institute, Mysore Rs. 5/-

THE book contains a collection of papers presented at the third symposium organised by the Central Food Technological Research Institute, Mysore, in 1953.

The papers published in the volume describe the present state of the Indian Food Industry and the technical and other problems facing it. The first few papers deal with the need for technical assistance to the industry and emphasize the difficulties involved in improving the quality of processed food products. The other papers discuss the problems of specific industries ancillary to the main food industries. The subjects dealt with cover a wide range of industries. Biscuits, bakery, flour and barley milling, confectionery, cocoa, fruit and vegetables, cold storage, deep-freezing—these are some of the industries dealt with. If quality is a

vital factor in commercial production, in general, it applies with special emphasis to food products. In one of the papers published in the book, "Quality of production in food industries in India", the author deplores the indifference of some manufacturers to quality production. The importance of research aimed at improving quality is, also, dealt with by the author.

The paper on "Vegetable oil refining industry" presented by our own C. S. Srinivasan deserves attention. Loss of oil in excess of the impurities contained in it is the main problem in refining. The author, after describing the methods of refining vegetable oils as adopted in India, puts forth a strong plea for introducing continuous or semi-continuous centrifugal refining methods for minimising oil losses.

In general, the various papers lay stress on the need for closer co-ordination between agri-horticultural authorities and the food processing industry, for making available good quality raw materials at economic prices, for fabrication of the equipment required for small-scale and large-scale industries and for the adoption of modern scientific methods.

A well got-up and useful, little publication, this book contains much food for thought on thoughts for food!

—N. SUNDARESAN.

## METKEM Miscellany

*Annual Day of SOT:* The Society of Technologists celebrated their Annual Day on December 18, 1954, with Mr. S. Ramaswamy, President in the chair. Prof. B. M. Das, Director, Central Leather Research Institute, Madras, delivered the Annual Day address, his subject being 'Chemicals in Modern Leather Manufacture'.

After tea, Mr. S. Ramaswamy welcomed Prof. Das and other guests. He pointed out how close collaboration between research institutes and chemical industries could promote the cause of industry in the country.

Mr. K. Sampath then read the messages received on the occasion. Among others, Mr. K. Santanam, Lieut. Governor of Vindhya Pradesh, Mr. S. Vaidyanatha Iyer, Board Chairman, and Mr. V. Balasundaram, Commissioner for Labour, Madras, had sent messages of good wishes.

Prof. Das then delivered his address, a summary of which is given elsewhere in this issue.



*Mrs. Akila Raman distributing the prizes.*

With a vote of thanks by Mr. C. S. Srinivasan, Secretary, the function came to a close.

*Staff Association Anniversary:* The anniversary of the Staff Association was celebrated on December 26, 1954, with Mr. V. Seshasayee, Director, Managing Agents, and President of the Association, in the chair. After tea, Mr. N. Sundaresan, Joint Secretary, read the Annual Report of the Association. Mrs. Akila Raman distri-



*Mimicry performance by "Vakram" Brothers.*



Newly-weds—  
Lalithambal and R. Santanam.

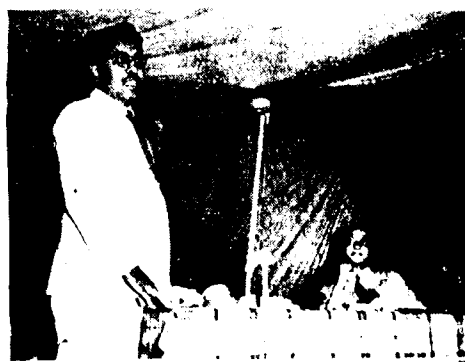
buted the prizes to the successful competitors in the annual sports and tournaments conducted by the Association.

Addressing the members, Mr. Seshasayee referred to the duties and obligations of individuals to society, and pointed out with several quotations how one could discharge one's duties by following the path of *dharma* or righteous conduct. Mr. S. Vaidyanatha Iyer, who spoke afterwards, referred in appreciative terms to the work of MCIC personnel. He also commended them for their interest in sports, fine arts and similar cultural activities. Further efforts on the part of staff were needed in making the industry serve the nation even better, he concluded.

Later, there was a mimicry performance by V. Venkatraman of the Allied Industrial Distributors, Ltd., Madras and his *confrere* Meenakshisundaram. The large audience thoroughly

enjoyed their most diverting act. At the end of the performance, silver cups were presented to them by Mr. N. Krishniah, Vice-President of the Association.

The Dramatic Club of the Association then put on boards a play in Tamil called *Puyalum Thenralum* ("Blast and Breeze") from the pen of Mr. Gomathi Swaminathan, well-known playwright. A review of the play appears in our Tamil Section. Members of the *Muthamizh Nataka Manram*, the newly-formed arts society of the Mettur Chemicals Workers Union, put on boards another play in Tamil entitled *Neethiyin Theerpu* ("Law's Verdict") on December 27, 1954. The play, dialogues and lyrics were the work of Mr. T.P. Loganathan of our maintenance group. Mr. A. P. Krishnan directed the play, assisted by the author and Mr. A. Sambasivam. A brief review of this play also appears in the Tamil section.



Mr. P. Sabanayagam, I.A.S.,  
presiding over the annual celebrations  
of the Secondary School.

*Weddings:* To the following members of our staff who got married recently, we offer our congratulations.

Mr. R. Santanagopalakrishnan, (Lab.) with Miss. Lalithambal; and Mr. S. Venkatraman (Transport) with Miss. Alamelu.

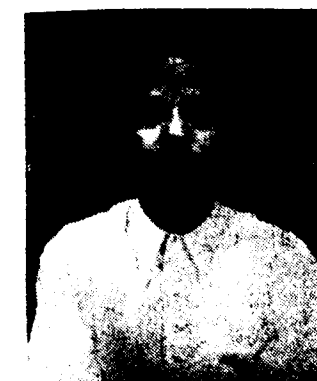
*Pictures:* Films screened in recent months included: *Ambush*, *Go West*, *Soldiers Three*, *Above and Beyond*, *Texas Carnival*, *Watch the Bride*, *Merry Widow*, *Madame Carie*, *The Loves of Carmen*, *Man with Nine-Lives*, *Crown of the Year*, *Commonwealth of Nations*, *Irrigation Farming* and *Workers for Peace*.

*Mettur Chemicals Schools:* Following the resignation of Mr. N. Rajagopal from the School Committee in the middle of December 1954, Mr. K. K. Dharmarajan was elected Hon. Secretary and Mr. C. S. Srinivasan, Hon. Correspondent of the Secondary and Elementary Schools.

A number of students and teachers of the Secondary School went on an excursion to Mahabalipuram, Tirukalukundram and Madras in the last week of January.

The annual sports and tournaments of the Secondary School were conducted

in the middle of March 1955, and the annual day celebrated on March 18. Mr. P. Sabanayagam, I. A. S., District Collector, Salem, presided over the Annual Day function and distributed the prizes. The students of the school put up an interesting variety show.



Mr. B. Govindarajulu Naidu.

*Obituary:* The death occurred recently of a good friend and well-wisher, Mr. B. Govindarajulu Naidu, Head Clerk, Mettur Industries, Limited. On several occasions in the past, Mr. Naidu had extended his help in directing our staff day dramas and in organizing religious discourses. Even a few hours before his demise, he was coaching the children of our Secondary School for a play. We have lost in him a kind and most helpful friend.

## CHEMICAL Briefs

*Enrichment of Vanaspati:* With a view to increasing further the nutritive value of vanaspati, the Government of India have decided that all vanaspati manufactured on or after 1st May 1955 shall contain not less than 700 international units of synthetic vitamin 'A' per oz. instead of 300 international units as at present.

*"Atoms for Peace" Exhibition:* Dr. K. S. Krishnan, F. R. S., Director, National Physical Laboratory, declared open the "Atoms for Peace" Exhibition in New Delhi on March 10, 1955, before a large gathering including Members of Parliament, Scientists and Government Officials.

Declaring the exhibition open, Dr. Krishnan said: "It is very refreshing that great efforts are being made if not towards directing all the energies of atomic scientists to peace-time uses, at least towards shifting the emphasis in that direction. There are immense potentialities for peace-time uses of the atom", observed Dr. Krishnan. He continued: "Even the current applications are sufficiently impressive, particularly the use of radio-active isotopes and of the radiations from them for a wide variety of purposes, from agriculture to medicine, from the study of

metabolism of elements in the plant and in the animal to following in detail some of the processes in industry."

*Synthesis of Citral:* A method for the synthesis of citral, the chief raw material for synthetic vitamin 'A', is reported to have been developed by Hoffman-La-Roche, Switzerland. Although detailed information is lacking, at the moment, it is known that synthesis of citral is based on acetylene chemistry and that an acetylene derivative provides the starting material. Citral has so far been obtained from lemongrass oil, processed in the country or imported from Guatemala.

*Industries for Madras in Second Five-Year Plan:* Addressing recently a conference of prominent industrialists and representatives of trade associations in the State, Mr. M. Bhaktavatsalam, Minister of Industries, invited their suggestions in the formulation of industrial schemes for inclusion in the Second Five-Year Plan.

He said in planning for industrial units, whether large, medium or small-scale, they would propose such of them as could be economically set up and operated, with due regard to the markets and demand for their products, availability of raw materials, the quantum of power required, etc.

The conference, first of its kind convened in the State, discussed the scope of industrial development of Madras, both in the private and public sectors.

The present exploratory exchange of information would be followed up by "detailed working out of schemes" for submission to the Planning Committee.

Mr. C. Subramaniam, Finance Minister, said that the exhaustive "thinking out" of schemes for expansion of existing industries or for establishment of new ones, whether private or public, would be entrusted to two Committees of industrialists and Government representatives—one for large and medium-scale industries and the other for small-scale and cottage industries.

Mr. V. Seshasayee, who was one of the invitees to the conference, referred, in the course of his observations, to the question of hand-loom *versus* power-loom. He expressed the view that wherever possible power should come to the help of man so that general productivity could be increased. Every hand-loom weaver should be encouraged to use power. Unless productivity was increased, they could not expect the standard of living of weavers to rise much.

*By-product ammonium sulphate:* The production of by-product ammonium sulphate from coke-oven gas by the Wilputte low-differential process is described in a recent issue of *Chemical Trade Journal*. In this process, a part of the ammonia is recovered as condensate from the coke-oven gas, distilled and returned to the main gas stream which then enters the ammonium sulphate scrubber. Here the gas is sprayed with a concentrated solution of ammonium sulphate containing approximately 5 per cent of sulphuric acid which effectively removes ammonia from the gas. The solution is

pumped from the base of the scrubber to the crystallizing tank and from there to an evaporator with a vacuum chamber. The super-saturated solution is circulated through the crystallizing tank where ammonium sulphate is deposited on the previously existing crystals. From the bottom of the tank, the slurry is fed to a centrifuge, the crystals deposited on the stainless steel basket being washed, dried and packed.

*Ethyl Ether and Ethylene Dichloride:* A new continuous process for production of ether has been developed at the Shri Ram Institute for Industrial Research, New Delhi. In this process, a fluidised catalyst bed is used or vapour phase catalytic dehydration of alcohol instead of the static bed employed in countries other than India. Advantages claimed are: (1) the elimination of corrosion problems, (2) better thermal efficiency, and (3) a better output.

In the same Institute, another process for the manufacture of ethylene dichloride has been developed. In this process ethyl alcohol is converted to ethylene which is then chlorinated to ethylene dichloride. The special features of the process are: (i) the use of fluidised bed reactor for generation of ethylene from alcohol and (ii) an efficient chlorinator working at 90—95 deg. F without local heating. The process will help to extend the use of chlorine, a surplus product of the Indian alkali industry to new fields.

# SPORTS *Gottings*



*Staff Association Annual Day Tournaments: (1954):*

A Sports Committee consisting of T. D. Krishnaswami, P. B. Srirangan, R. Govindaraghavan, T. A. Javanthi-nathan and K. Ganesh was constituted. They were vested with the responsibility of conducting the matches. We give below an account of the various sports events.

*Tennis Singles:* (11 entries) S. Ramaswamy had to go all out in the finals to beat K. R. Ramakrishnan by 2 sets to 1. The latter revealed his fine sportsman-like spirit in this as well as in the earlier rounds. S. Sambandamurthi, a new comer surprisingly beating A. R. Narayanan, last year's junior champion, almost succeeded in pushing out K. R. Ramakrishnan.

Two top-ranking players of our club sportingly stood down in the tournament.

*Tennis Doubles:* (7 entries) N. Sundaresan and K. K. Dharmarajan beat S. Ramaswami and V. Ananthakrishnan in the finals by 2-0 quite easily.

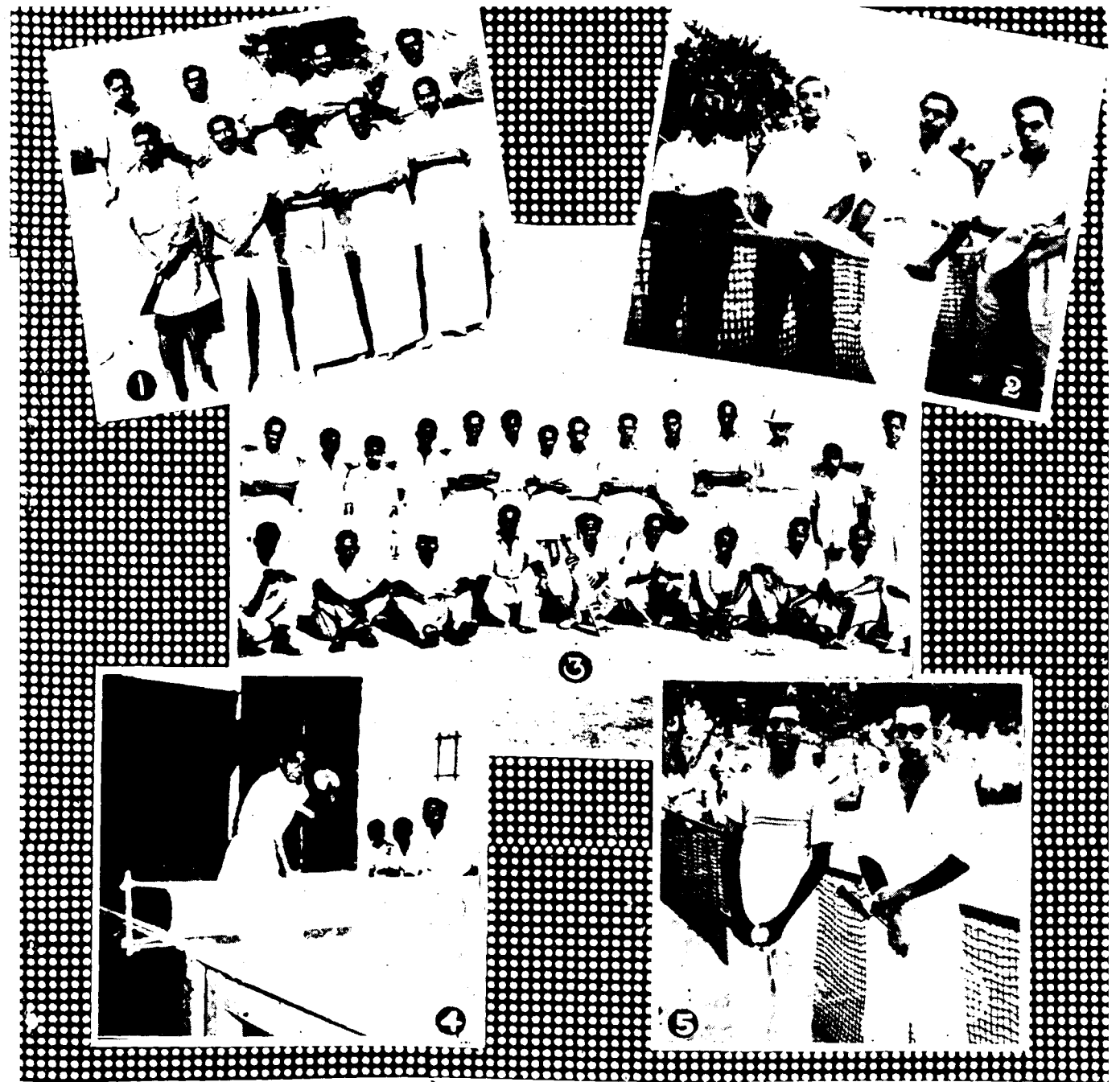
But the semi-finals between the winners and P. B. Srirangan and R. V. Ramani was the best match of the tournament.

*Badminton Fives:* (7 entries) P. B. Srirangan's team beat S. Sambandamurti's team in the finals by 2 games to 1 rather easily.

*Badminton Doubles: (Seniors):* (5 entries) K. Ganesh and K. Sampath played very well to beat S. Sambandamurti and C. S. Ramaswami in two straight games. Ganesh played a veteran's game in all the matches and Sampath finished well at front.

*Badminton Doubles (Juniors):* (5 entries). T. D. Krishnaswami and D. Sethuraman beat T. A. Javanthi-nathan and N. Kalyanam in the finals 2-0.

*Volleyball Trebles:* (10 entries). K. Sampath's team beat A.P.S. Mani's team very easily in 2 straight games in the finals. The runners-up, who had shown brilliant form in the previous rounds, were rather off-colour in the finals.



1. *Badminton Fives—Winners (up) and Runners (down).*
2. *Tennis Doubles: K. K. Dharmarajan and N. Sundaresan (Winners), with S. Ramaswami and V. Ananthakrishnan (Runners-up).*
3. *Cricket Tournament—Finalists.*
4. *A fine action picture of T. S. Subba Rao, Table-tennis Champion.*
5. *Tennis Singles—S. Ramaswami (Winner) and K. R. Ramakrishnan (Runner-up).*

*Volleyball Sixes:* (11 entries), N. Venkatachalam's team beat R. G. Raghavan's team in the finals by 2—1 in a most exciting match.

*Ring Tennis Doubles (Seniors):* (8 entries) S. Muniyappan and N. S. Pareswaran defeated P. B. Srirangan and G. Jayaram in the finals by 2 sets to nil.

*Ring Tennis Doubles: (Juniors)* (6 entries): N. Venkatachalam and A. Gaffur beat D. Rathnam and T. A. Javanthinathan in the finals by 2 sets to 1 easily.

*Table Tennis Singles: (Seniors)* (10 entries): T. S. Subba Rao annexed the singles title this year by beating V. Vaidyanathaswamy by 3 games to nil, thus avenging his defeat of last year at the hands of the latter.

The semi-finals event between Subba Rao and K. R. Ramakrishnan was a keenly-contested affair. Also called for is a special pat on the back of M. A. Shanmugham who gave a thrilling exhibition of relentless attack against Vaidyanathaswamy.

He rather over-did his attack and that was probably the reason for his failure, but the fact still remains that it was a great match.

*Table Tennis Singles: (Juniors)* (15 entries): R. G. Raghavan was

clearly the best player. He beat T. D. K. Sami in the finals.

*Table Tennis Doubles:* (10 entries): T. S. Subba Rao won the double crown. Partnering N. Krishnamurthi he beat S. Ramakrishnan and R. G. Raghavan in the finals in 3 straight games.

*Caroms Doubles:* (14 entries) K. Rathinam and G. Jayaraman beat S. Sambandamurti and N. Gopalan by 2 games to 1.

*Chess* (11 entries): A shy, nineteen-year old youth, K.R.Srinivasan became the champion of the year by beating veteran N. Krishniah in the finals by 2—0. Earlier, he disposed of T.K. Sitaraman, another ex-champion.

*Auction Bridge:* (13 entries). M. A. Arokiaswami and P. R. Subramanian beat A. R. Narayanan and K. V. Subramanian in the finals in a close game, the last deal being a date with destiny.

*Contract Bridge:* (10 entries) The auction bridge winners completed a grand double by beating T.M. Krishna Rao and P. A. Ragupathi Iyer in the finals in another close game.

*Literature* (10 entries): Fancied teams went hay-wire and two unseeded teams fought out the finals. S. Sambandamurthi and partners beat T. K. Sitaraman and partners comfortably.

*Cricket:* (4 entries): All the three matches provided plenty of thrills. T. D. K. Sami led his team to victory in a great final.

The first match between R. G. Raghavan's team and K. Sampath's team was a low-scoring one which the former won amid great excitement by the slim margin of 3 runs.

Batting first, the winners first collected only 72 runs. P. R. Venkateswaran and P. R. Subba Rao putting on 37 valuable runs for the first wicket. Sampath returned an excellent analysis of 4 for 17 with his slow bowling.

When their turn came, Sampath's team, a strong batting side on paper, collapsed inexplicably for 69 runs, although it must be admitted R. G. Raghavan and G. Raju bowled steadily and accurately. Skipper Sampath fought a lone battle and as it turned out, in vain, for 20.

In contrast, the second match between the teams of T. D. K. Sami and N. Kalyanam was a high-scoring match, the former winning by 86 runs.

Batting first, T. D. K.'s boys amassed a huge total of 200 for 9, declared. T. Antony, one of our most promising players, played a great innings to become top scorer with 54. His opening stand with P. R. Venkateswaran produced 57 runs and after T. D. K. Sami was run out for 1, he

put on another 50 runs for the 3rd wicket with C. Kandasamy who contributed 37 runs with some fine wristy shots to leg. More things were to come. Fourteen-year old T. K. Ramadoss coming in next played a very sweet innings for 36 n. o. Bowlers were not let at that. T. A. Javanthinathan, former Srirangam High School Cricketer (and since retired!) coming as No. 8 had his go at the bowling and by Jove, it was *some* go! He drove spectators crazy with excitement, with his high, wide and handsome shots on the on-side, and when he returned to the pavilion after a breezy knock of 26, he received a great ovation.

Kalyanam's team faced a big total. Much depended on the skipper himself. C. Kandasamy opened the bowling with a lot of fire and venom in it. After scoring 9 runs Kalyanam was unfortunate to play on to his stumps off a delivery from Kandasamy. T. G. Rangan who opened played dourly to score 27 before he was teased by T. D. K. Sami's leg-spinners and ultimately got stumped. R. V. Ramani boldly hit out and was the top scorer with 35. P. B. Srirangan who could have played a fighting innings was out early to a remarkable catch at second slip by S. Ramamurthi (A.E.) and the whole side was out for 115.

The finals was a most interesting match.

R. G. Raghavan's team batting first piled up a big score of 168 runs. The fair and stockily-built wicket-keeper of our team, P. R. Venkateswaran, who opened the innings, had the distinction of carrying the bat through the innings for his 87 runs. Aided by a few lucky breaks, and troubled to the end by T. D. K. Sami's leg-spinners, his was indeed a most laudable effort. R.G. Raghavan played a real captain's innings for 24 while Rangan (Jr.) scored 17 playing the slow bowlers with delightful foot-work. T. D. K. Sami was always dangerous and he captured 6 wickets for 68 runs while veteran R. Natarajan (J.E.) also bowled well at the other end.

The total looked good and safe, but Raghavan's team had a few guesses coming! T. D. K. Sami opened the innings with T. Antony. The pair soon settled down and began to set such a fast pace that it looked as if they wanted to knock the required runs themselves! Antony's first 16 runs came in boundaries, Raju conceding 17 runs in his third over. Both he and T. D. K. Sami were playing with a careless abandon and it came as a surprise when T. Antony was brilliantly run out by a smart throw from Rangan (Jr.) with the total at 62. Kandasamy came and went for 1. In came Srirangan and things began to happen with the batsman running singles and twos with excellent understanding. They were complete masters of the situation, and carried the total to 169 and their side to a grand victory by 9 wickets. Srirangan who hit 12 fours in a workman-like innings of 75 n.o., was in aggressive mood while T. D. K. Sami at the other

end carried his bat for a well-played and confident 51. The unbroken stand for the third wicket had yielded 105 runs. Well done, T. D. K. Sami and Company!

#### *Detail of Scores:*

R. G. Raghavan's team 72 (P. R. Subba Rao 25, P. R. Venkateswaran 16, Rangan (Jr.) 11 n.o. N. Narayana Rao 4 for 25, K. Sampath 4 for 17) beat K. Sampath's team 69. (K. Sampath 20, N. Narayana Rao 14, P. B. Srirangan 14, Raju 5 for 19 R. G. Raghavan 6 for 38).

T. D. K. Sami's team 201 for 9 Declared (T. Antony 54, C. Kandasamy 37, T. K. Ramdoss 36, n. o. T.A.J. Nath 26, V. Srinivasan 2 for 39, P. B. Srirangan 2 for 8) beat N. Kalyanam's 115 (R.V. Ramani 35, T.G. Rangan 27, T D.K. Sami 5 for 36, K. Ganesh 14, C. Kandasamy 3 for 20). R. G. Raghavan's team 168 (P. R. Venkateswaran 87 n.o. R. G. Raghavan 24, Rangan (Jr.) 17, T D. K. Sami 6 for 68, Ramdoss 2 for 13) lost to T. D. K. Sami's 169 for 2 (P. B. Srirangan 75 n.o. T. D. K. Sami 39, n.o. T. Antony 33, R. G. Raghavan 1 for 65).

#### *Field Events:*

Once again L. Venkatadoss put up a fine performance to annex the special prize for the best athlete of the year.

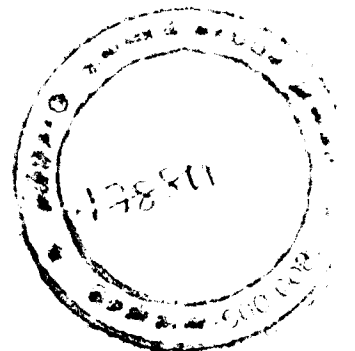
C. S. Srinivasan, who had entered for 9 events and failed to get a prize, succeeded finally in getting the consolation prize for the year.

The complete list of prize-winners is given separately.

### THE METTUR CHEMICALS STAFF ASSOCIATION.

#### *List of Prize-Winners—Annual Tournaments, 1954.*

|                               |                |                                                                                                              |
|-------------------------------|----------------|--------------------------------------------------------------------------------------------------------------|
| TENNIS SINGLES :              | { Winner :     | S. Ramaswamy                                                                                                 |
|                               | { Runner-up :  | K. R. Ramakrishnan                                                                                           |
|                               | { Winners :    | N. Sundaresan and K. K. Dharmarajan                                                                          |
| TENNIS DOUBLES :              | { Runners-up : | S. Ramaswamy and V. Ananthakrishnan                                                                          |
|                               | { Winners :    | K. Sampath and K. Ganesh                                                                                     |
| BADMINTON DOUBLES : (Seniors) | { Runners-up : | S. Sambandamurthy and C. S. Ramaswamy                                                                        |
| BADMINTON DOUBLES : (Juniors) | { Winners :    | T. D. Krishnaswamy and D. Sethuraman                                                                         |
| BADMINTON FIVES :             | { Winners :    | P. B. Srirangan<br>P. R. Subramanian<br>S. Panchapakasa Iyer<br>S. K. Chakrapani and K. S. S. Mani           |
|                               | { Runners-up : | S. Sambandamurthy<br>S. Ramaswamy<br>A. Krishnamurthy<br>N. Venkitachalam and S. Rajan                       |
| VOLLEY BALL TREBLIS :         | { Winners :    | K. Sampath<br>D. Sethuraman and S. Arokiyaswamy                                                              |
|                               | { Runners up : | A. P. S. Mani<br>S. Rajagopal and L. Venkatadoss<br>N. Venkitachalam<br>S. Ramakrishnan                      |
| VOLLEY BALL SIXES :           | { Winners :    | R. B. Deenadayalu<br>A. Krishnamurthy<br>T. K. Sitaraman and K. R. Srinivasan                                |
|                               | { Runners-up : | R. Govindaraghavan<br>S. Rajagopal<br>V. Subramanian<br>P. S. Natarajan<br>V. R. Krishnan and K. Subramanian |



|                                     |   |                                                                                                                                                                                           |
|-------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RING TENNIS DOUBLES :<br>(Seniors)  | { | <i>Winners :</i> S. Muniappan and<br>N. S. Parameswaran                                                                                                                                   |
|                                     | { | <i>Runners-up :</i> P. B. Srirangan and<br>G. Jayaraman                                                                                                                                   |
| RING TENNIS DOUBLES :<br>(Juniors)  | { | <i>Winners :</i> N. Venkitachalam and<br>A. Gaffuran                                                                                                                                      |
|                                     | { | <i>Runners-up :</i> T. S. Subba Rao and<br>A. Krishnamurthy                                                                                                                               |
| TABLE TENNIS DOUBLES :              | { | <i>Winners :</i> S. Ramakrishnan and<br>R. Govindaraghavan                                                                                                                                |
|                                     | { | <i>Runners-up :</i> T. S. Subba Rao<br>V. Vaidyanathaswamy                                                                                                                                |
| TABLE TENNIS SINGLES :              | { | <i>Winner :</i> R. Govindaraghavan                                                                                                                                                        |
| TABLE TENNIS SINGLES :<br>(Juniors) | { | <i>Winner :</i> K. R. Srinivasan                                                                                                                                                          |
| CHESS : ...                         | { | <i>Runner-up :</i> N. Krishniah                                                                                                                                                           |
|                                     | { | <i>Winners :</i> P. R. Subramanian and<br>M. A. Arokiyaswamy                                                                                                                              |
| AUCTION BRIDGE :                    | { | <i>Runners-up :</i> A. R. Narayanan and<br>K. V. Subramanian                                                                                                                              |
|                                     | { | <i>Winners :</i> P. R. Subramanian and<br>M. A. Arokiyaswamy                                                                                                                              |
| CONTRACT BRIDGE :                   | { | <i>Runners-up :</i> T. M. Krishna Rao and<br>P. A. Raghupathy Iyer                                                                                                                        |
| LITERATURE :                        | { | <i>Winners :</i> N. Venkitachalam<br>S. Sambandamurthy and<br>R. Natarajan (J. E.)                                                                                                        |
|                                     | { | <i>Runners-up :</i> M. Padmanaban<br>T. K. Sitaraman and<br>C. S. Ramaswamy                                                                                                               |
| CAROMS DOUBLES :                    | { | <i>Winners :</i> K. Rethinam and<br>G. Jayaraman                                                                                                                                          |
|                                     | { | <i>Runners-up :</i> S. Sambandamurthy and<br>N. Gopalan                                                                                                                                   |
| CRICKET :                           | { | <i>Winners :</i> T. D. Krishnaswamy (Captain)<br>T. Antony<br>S. Ramamurthy (A. E. Elec )<br>R. Natarajan (J. E.)<br>K. V. Subramaniam<br>M. Padmanaban<br>K. Suri<br>P. R. Venkateswaran |

|           |                                                                                       |
|-----------|---------------------------------------------------------------------------------------|
| CRICKET : | C. Kandaswamy<br>T. K. Ramadoss<br>T. A. Javanthinathan<br>S. Ramamurthy (Office Boy) |
|           | <i>Best Batsman :</i> N. Kalyanam                                                     |
|           | <i>Best Bowler :</i> N. Narayana Rao                                                  |

## FIELD EVENTS

|                      |                                  |         |
|----------------------|----------------------------------|---------|
| HIGH JUMP :          | I Prize ... V. Subramanian       | 4' 8½"  |
|                      | II Prize ... R. Krishnaswamy     |         |
| LONG JUMP :          | I Prize ... L. Venkatadoss       | 17' 3"  |
|                      | II Prize ... R. Krishnaswamy     |         |
| HOP, STEP AND JUMP : | I Prize ... L. Venkatadoss       | 37' 0"  |
|                      | II Prize ... T. Antony           |         |
| SHOT PUT :           | I Prize ... T. A. Javanthinathan | 35' 7"  |
|                      | II Prize ... O. P. Nagarajan     |         |
| POLE VAULT :         | I Prize ... P. Chockalingam      | 8' 1"   |
|                      | II Prize ... L. Venkatadoss      |         |
| SLOW CYCLE :         | I Prize ... R. Dorairaj          |         |
|                      | II Prize ... Arumugam            |         |
| CRICKET BALL THROW : | I Prize ... O. P. Nagarajan      | 224' 4" |
|                      | II Prize ... L. Venkatadoss      |         |

## FOR CHILDREN

|                    |                           |              |
|--------------------|---------------------------|--------------|
| 50 YARDS DASH :    | I Prize ... V. Kandaswamy | (V Std.)     |
|                    | II Prize ... Madesan      | (II Std.)    |
| POTATO GATHERING : | I Prize ... Mary          | (V Std.)     |
|                    | II Prize ... Lakshmi      | (III Std.)   |
| MUSICAL CHAIRS :   | I Prize ... Kalyani       | (II Std. B.) |
|                    | II Prize ... Chandra      | (II Std. A)  |

## FOR PICKERS

|                        |                                                 |
|------------------------|-------------------------------------------------|
| TABLE TENNIS SINGLES : | <i>Winner :</i> Raman                           |
|                        | <i>Runner-up :</i> Ethiraj                      |
| RING TENNIS DOUBLES :  | <i>Winners :</i> Palanisamy and<br>Thangavelu   |
|                        | <i>Runners-up :</i> Jayaraman and<br>Arumugham. |

## 

**A pat for Sam:** Back in 1940-42, the Madras Loyola College hostel ran a magazine called *Loho News*, of which C. S. Srinivasan of METKEM was editor and founder. At least one page of the *News* was devoted to chronicling the activities of SAMCO, a club founded by K. Sampath, now a chemist with us, and as fine a chemist as you can ever hope to meet in a long summer's day.

Some dailies and periodicals, a round of one card game or another — those about constituted SAMCO's activities. But if reports in *Loho* were any indication, all the earth-shaking events were confined to, and concentrated in, this little club. And don't forget that we were in the midst of World War II in the 1940's, but the war took a back-seat, if at all, in *Loho News*. Front page was SAMCO.

Recently, Sampath made a terrific hit in our Staff Day drama, and although it was his maiden *début*, he wrung for RAGHAVAN, the character he played, a bucketful of affection and

sympathy. Spare, tall and athletic and going about in slow, measured steps, (as through he was doing the Lambeth walk or something) Sampath is one of our most popular personalities.

A good cricketer, (he can keep wickets like no wicket-keeper's business and bowl tantalising, slow-spinners) an A. I. front in badminton and a smasher in volley-ball, Sampath is an all-round sportsman.

**Figures and Fingertips:** Whatever connection there is between figures and fingertips manifests itself in a marked manner in our Assistant Time-Keeper K. Venkataraman. Affectionately designated "Chitragupta" on account of the precise particulars he can rattle off his memory about any employee, Venkataraman is a real asset to our



K. Sampath.



K. Venkataraman.

Time Office. He knows also when, and what papers or returns have to go, and to which departments, and would see to it that those papers left our Time Office well ahead of time.

Venkataraman's retentive memory always works out to one's discomfiture! One hands over one's leave application at the Time Office, and before one has had time to leave its precincts, Venkataraman blithely announces from memory one's leave (in-)eligibility, and, alas, he is right—records support him—and one has well and truly had it!

Venkataraman joined us in 1942. You seldom find him without papers, registers or ledgers, and on the off-chance of your meeting him *minus* his papers, registers and ledgers, he will give you a beatific, benevolent smile and start chewing *pan*. If your

luck and his stock together hold out, the chances are not entirely slim that you might not be invited to partake in the "chew"!

**Men behind the scenes:** A welcome development this year was the staging of a drama under the auspices of the Workers' Union. "Oscar" for it goes to the office-bearers of the *Muthamizh Kalamamram*, and chiefly to A. P. Krishnan, T. P. Loganathan and A. Sambasivam.

A. P. Krishnan is an operator in our Power House. Highly skilled in handling machines, tools and materials, Krishnan underwent a course of training in mechanics with the P.S.G. Institute, Coimbatore, in 1940. The subsequent training he received in various fields such as gas and electric arc welding, refrigeration, heavy armament mechanics, etc, during his war service are now standing him in good stead. After taking his discharge from the army in 1947, he was for one year with the South



A. P. Krishnan and T. P. Loganathan.

Madras Agencies. Limited, Tiruchi, and obtained a civil welder's licence. Early in 1949, he joined the Vanaspati factory at Tiruchi. (then owned by us) and was transferred to Mettur in December 1950. For the most part, his service has been in the electrical section.

Very good at volleyball, Krishnan plays quite a brainy game. His histrionic talents and organizing ability, latent all along, became patent recently. Krishnan is the worthy President of *Kalamanram*.



*A. Sambasivam.*

T. P. Loganathan is a worker in the maintenance group and has been with us since December 1950. In his High School, he was as good a student as students go, but even better as an

actor. He joined a dramatic society in Madura in 1946 and soon rose to stardom. In 1949, he himself organised another dramatic society in Tanjore, but it wilted and died, because of general public apathy to stage plays. Kissing a reluctant good-bye to an acting career, he joined the South Madras Electric Supply Corporation, Limited, Tiruchi, in 1949. He came to MCIC in December 1950. This year as A. P. Krishnan and A. Sambasivam were talent-scouting for the play to be put on boards by the Union, they struck Loganathan; he gave them the story, wrote the dialogues, and even the musical score.

The fine job of work that he put through for the drama elicited a chorus of praise from one and all at Mettur, and the President of the Union awarded him a much deserved special prize, kindly donated by S. Rajan of our Workshop.

Author of several dramatic stories, A. Sambasivan directed the play got up by the Union. Sambasivan is an electrician by profession. He had his training in the electrical and mechanical sections and the carpentry shop of the St. Josephs' Industrial School, Tiruchi. Before joining MCIC in 1949, he was serving with firms of electrical wiring contractors.



## They were Welcome

Among the visitors who paid us the honour of a visit in recent months were : Mr. L. R. Tambe, PRO, Vanaspati Manufacturers' Association of India ; Prof. B. M. Das, Director, Central Leather Research Institute, Madras ; Dr. G. I. Higson, Former Chairman of the Billingham Division of I.C.I. Ltd., now with I.C.I. (India) Ltd., Calcutta, Mrs. Higson, and Mr. C.E.J. Crawford of I C I. (India) Ltd., Calcutta.

- (1) *Prof. B. M. Das and  
S. Ramaswami, President,  
Society of Technologists.*
- (2) *Dr. G. I. Higson, Mrs. Higson,  
Mr. C. E. J. Crawford and others.*
- (3) *Mr. L. R. Tambe and  
R. Natarajan,  
Secretary, M.C.I.C. Ltd.*

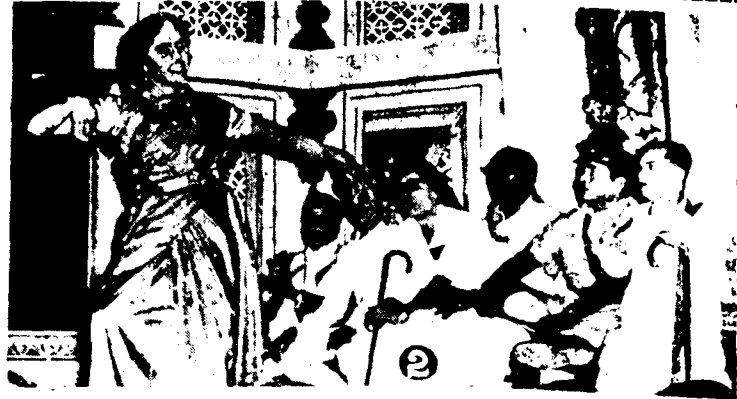


## கவிதையும் கடமையும்

5



## 'புயலும் தென்றலும்'



சீல

காட்சிகள்



வனையோர்க்கு அரிதாய் ஆனந்த நிலையை அடைகின்றனர். துறவி நன்னுள் எழும் ஆனந்தத்தைத் தானே அனுபவித்து அடங்குகிறான். ஆனால் கவிஞரே இவ்வுயர்வ உணர்வைப் பிரதம் அனுபவிக்க வேண்டுமெனத் துடிக்கிறான். வினாவு? கவிதை பிரக்கிறது. ஆனால்... கவிஞன் சில சமயங்களில் உள்ளம் போர்வடைகிறான்... உயர்ந்த கவிதையில் பொதிந்த இனிமைப் பொருளைத்தான் உலகம் உடனே உணர்வதில்லையே!

கீதையில் கண்ணன் கூறுகின்றான் "உலகில் தேர்மை நிலைகுலைந்து ஒழுங்கினம் பரவத் தொடங்கும்போதெல்லாம் நான் தோன்றி அறத்தை நிலைநிறுத்துவேன்" என்று. உலகப் பெரியார்களான இயேசுநாதரும், கௌதம புத்தரும், அண்ணல் காந்தியும் இவ்வொழுங்குச் சுவற்றை எழுப்பினர். ஆனால் அவ்வொழுங்குச் சுவற்றை இடித்துப் பொடியாக்க நலத்தின் மன்னவர் முயலுகின்றனர்.

இங்கே கவி மன்னன் கம்பன் வாணலில் நிகழ்த்தாகக் கூறப்படும் பெய்தியொன்று என் மனத்தில் எழுகிறது. போழ் அரவாறுடன் ஏற்பட்ட ஒரு சிறு பிணக்கின் காரணமாக, "மன்னவனும் நீயோ, வளநாடும் உன்னதோ? என்னை விரைந்தேற்றுக் கொள்ளா வேந்து உண்டோ, உண்டோ குரங்கேற்றிக் கொள்ளாக் கொம்பு?" என்று சினத்

துடன் வினவிவிட்டு வெளிப்போந்தான் கம்பன். ஆனால் அவன் பாவின் சுவையுணர்ந்து பாராட்டுவாரின்றி வறுமை மிகுந்து வாடினான். வேலியென்பாள் கொடுத்த கூலிக்காக ஒரு சுவரெழுப்ப முற்பட்டான். கட்டி முடித்துக் கூலி பெறத் திரும்பியபோது அவனை ஏமாற்றத்தில் ஆழ்த்தியது அவ்விந்தைச் சுவர்! ஆம். அவன் திரும்பியவுடன் அது நொறுங்கிவிட்டது! கம்பன் மனம் தளரவில்லை. இறங்கினான் சுவர் கட்டும் பணியில் மீண்டும். அதனைக் கட்டி முடித்தவுடன் சுவற்றை நோக்கி, "வேலி தரும் கூலி நெல் கொண்டுபோ மளவும் நிலைய நெடுஞ்சுவரே!" என்று உருக்கமாக வேண்டினான். சுவரும் நிலைத்து நின்றது!

சமுதாயம் எழுப்பும் ஒழுங்குச் சுவர் சரிந்து விழாமல் நிலைத்திருக்கவேண்டும். தன்னலனைச் சிறிது விட்டுக்கொடுக்கும் தன்மை நம்மிடம் தோன்றினால்தான் இது சாத்தியமாகும். விட்டுக்கொடுக்கும் மனப்பான்மை குறைந்தால் சமூகத்தின் நல்வாழ்வும், உயர் தன்மையும் நசித்து விடும். நாமே நமது பகைவர்களாகி விடுவோம். ஆகவே கொடுங்கோன்மையும் அநீதியும் தலைதூக்கா திருக்க, மக்களாட்சி மலர தன்னலங்கருதாது பிறர் நலன் பேணும் மனப்பான்மையைப் பெரிதும் வளர்க்க வேண்டும். கவிதையுள்ளம் கொண்ட ஒவ்வொருவரும் இதைத் தன் கடமையாகக் கொள்ள வேண்டும்.

1. நாடகத்தில் முய்யத்துவம் காட்டி உடை சி.கார்.ஜி. சீகாபாபைன் (A.R. ராஜ்கோட்டம்) காந்தியடிகளை அணிந்த சபனத்தின் (O. S. நடராஜம்) காட்சி மரீபோன குமாரசன் என்பதை மையிட்டு எடுத்தும் குறிப்பிடத்தக்க காட்சி.
2. சினிமா நடிகை கார்த்தாமணி (தேவகுதன்) வீரனில் அணந்தசபனத்தின் சி.கார்.ஜி. சீகாபாபைன் என்ப காட்சி.
3. வேடிக்கை நடிகர்கள்—K. S. ரமணி, S. நடத்துவது.க. சி.
4. மாறுவேடத்தில் ராகவன் (K. சம்பத்); அருள் இறம்பவன் கஞ்சி சுவர் மன்னன் (R. K. கந்திரி).
5. கார்த்தாமணி (தேவகுதன்) சேகர் (கம்பன்மன்).

## மெட்கம் செய்திகள்

### உத்தரேசுந்தர் சங்க ஆண்டு விழா

இச்சங்கத்தின் ஆண்டுவிழா டிசம்பர் 26-ம் தேதி மாணேஜிங் ஏஜண்ட் & டைரக்டர் ஸ்ரீ வி. சேஷசாயி அவர்கள் தலைமையில் நடைபெற்றது. சங்கக் காரியதரிசி ஸ்ரீ. N. சுந்தரேசன் ஆண்டறிக்கையைப் படித்தார். இவ்விழாவை ஒட்டி நடந்த போட்டிகளில் வெற்றி பெற்றவர்களுக்கு ஸ்ரீமதி அகிலாராமன் அவர்கள் பரிசுகள் வழங்கினார். ஸ்ரீ. சேஷசாயி தம் தலைமை உரையில் ராமாயணத்திலிருந்து ஆதாரங்கள் காட்டி தர்மத்தைக் கடைப்பிடிக்க வேண்டிய அவசியத்தை வற்புறுத்தினார். இதன் பிறகு சென்னை 'வக்ரம்' சகோதரர்களின் (ஸ்ரீ வி. வெங்கட்ராமன் & ஸ்ரீ. மீனாட்சந்தரம்) விகடக்கச்சேரி நடைபெற்றது.

அன்றிரவு சங்கத்தினர் ஸ்ரீ. கோமதி சுவாமினாதன் எழுதிய 'புயலும் தென்றலும்' என்ற நாடகத்தைத் திரும்ப நடத்தினர்.

### 'புயலும் தென்றலும்'

கதை: கோபாலன் ஒரு டாக்டர். அவன் ரங்கூனிலிருந்து அகதியாக வந்திருக்கும் சாம்பசிவத்தின் பெண் மரகதத்தைக் காதலிக்கிறான். வயது சென்ற வக்கீல் அனந்தசயனம் என்பவர் தம் குமாஸ்தா குப்புசாமியினால் தூண்டப்பட்டு மரகதத்தை மணக்கத்திட்டமிடுகிறார். குப்புசாமியின் சதியினால் கோபாலன் அபாண்டக்குற்றம் சாட்டப்பட்டு கைதியாகிறான்.

சினிமா நடிகை காந்தாமணியின் மையலில் மயங்கிக் கிடக்கும் சேகர் என்பவன் தன் மனைவி மஞ்சளாவைப் புறக்கணிக்கிறான். ராகவன் என்பவன் தன் முயற்சியால் சேகரைத் திருத்துவதுடன், கோபாலனையும் சிறையிலிருந்து விடுவிக்க ஏற்பாடு செய்கிறான். இச்சமயத்தில் கோபாலன் தான் வக்கீல் அனந்தசயனத்தின் காணாமற்போன புதல்வன் என்பது வெளியாகிறது. தொடர்ந்து கோபாலன் - மரகதம் விவாகம் நடைபெறுகிறது.

இந்த விவாக சந்தர்ப்பத்தில் சாம்பசிவத்துக்கு வெளிநாடு சென்று கொண்டிருக்கும் ராகவனிடமிருந்து ஒரு கடிதம் வருகிறது. அதிலிருந்து ராகவன் சாம்பசிவத்தின் மருமகன்தான் என்றும், அவனும் அவன் தாயாரும் ரங்கூனிலிருந்து வெகுநாட்களுக்கு முன்பே தாய்நாடு திரும்பி வந்துவிட்ட போதிலும், தான் யாரென்பதை வெளியிட்டால் சாம்பசிவம் தம் பழைய வாக்குறுதிப்படியும் விருப்பப்படியும் மருமகனாகிய தனக்கே மரகதத்தை மணமுடிக்க ஏற்பாடு செய்வார் என்பது உறுதியானபடியால், கோபாலன்-மரகதம் இவர்களின் காதல் வாழ்க்கை பாதிக்கப்படாமலிருக்க வேண்டி, அவர்கள் மணம் முடியும் வரை தன்னை யாரென்று வெளிப்படுத்திக் கொள்ளாமலேயே இருந்து எல்லோரும் சுகமாக வாழ உதவினான் என்பதும் வெளியாயிற்று.

இந்த நாடகத்தில் குப்புசாமியின் சதித் திட்டத்தில் உதவிசெய்யும் 'அத்



நீதியின்



தீர்ப்பு

தர் அண்ணாமையாக R. K. சுந்தரம் தோன்றி வெளுத்து வாங்கிவிட்டார். அவர் 'நடித்தார்' என்று சொல்வதை விட அத்தர் அண்ணாமையாக 'அவதாரம் எடுத்தார்' என்று சொல்வது மிகையாகாது. குப்புசாமியின் மிரட்டல்களுக்கு அவர் நடுங்கிய சந்தர்ப்பங்களிலும் காந்தாமணியின் தயவை நாடி அவளிடம் அஞ்சியும், கெஞ்சியும் நடந்த போதும், குப்புசாமியின் தூண்டுதலின் பேரில் திருடிவிட்டு மாறு வேஷத்தில் வந்த ராகவனிடம் மாட்டிக்கொண்டு விழிக்கும் கட்டத்திலும் R. K. சுந்தரம் திரும்ப நடத்தார்.

சேகராகத் தோன்றிய கல்யாணம் முதலில் ரௌடியாகவும் பின்னர் திருந்தியவனாகவும் வெகு இயற்கையாக நடித்தார். ராகவனிடம் ரூபாய் 'அபேஸ்' செய்யும்போதும், 'பகற்கொள்கை' போட்டியில் பெற்ற பரிசுத்தொகை இருபதாயிரத்தை சினிமா நடிகை காந்தாமணியிடம் சமர்ப்பிக்கும்போதும் பின்னர் அப்பணத்தை சேகரே திருடிவிட்டதாகக் காந்தாமணி குற்றம் சாட்டும்போது அவளிடம் வெறுப்படையும் கட்டத்திலும், கல்யாணம் நடிப்பின் சிகரத்தை எட்டிப்பிடித்தார்.

ராகவனாக நடித்தார் சம்பத். அவர் மேடைமீதுதோன்றுவது இதுவே முதல் தடவையாக இருந்தாலும், மெச்சத்தகுந்த முறையில் நடித்ததுடன், ராகவனிடம் சபையோருக்கு அன்பும் அனுதாபமும் உண்டாகும்படிச் செய்தார். தற்கொலை செய்துகொள்ள முயன்ற மஞ்சளாவைக் காப்பாற்றி அவளுக்கு வாழ்க்கையில் நம்பிக்கையூட்டும் போதும், சேகரைத் திருத்தி அக்குடும்பத்தைச் சீர்படுத்தும் முயற்சியிலும், கோபாலன்-மரகதம் காதலுக்கு இடையூறில்லாமலிருக்க தான் வகுத்த திட்டத்தைத் தாயாரிடம் எடுத்துச் சொல்லும் போதும், ராகவன் ஒரு தனிப்பிறவி என்பது வெளியாகும்படி நடித்தார்.

வக்கீல் அனந்தசயனமாகத் தோன்றிய ஸ்ரீ O. S. நடராஜன் மிக நன்றாகவும், இறுதிக் கட்டங்களில் மிக்க உணர்ச்சியுடனும் நடித்தார், சங்கீத

1. நீதியின் தீர்ப்பு நாடகத்தில் ஒரு காட்சி.
2. முத்தமிழ் நாடக மன்ற நிர்வாகக் கமிட்டி.
3. 'நீதியின் தீர்ப்பு' நாடகத்தில் ஒரு நடனக் காட்சி.

சபா காரியதர்சியை விரட்டிவிட்டு, வேடஸ் கிரிக்கட் விழாவுக்கு உற்சாகமாக ஆதரவு அளிக்க முற்படும்போதும், கார்தாமணியிடம் சல்லாபிக்கும்போதும், அவர் பகுத் அச்சா!

சினிமா நடிகை கார்தாமணியாகத் தோன்றிய K. தேவனாதனுடைய நாட்டியங்கள் மிக்க அற்புதமாக அமைந்தன. மரகதமாகத் தோன்றிய M. கிருஷ்ணமூர்த்தியும், மஞ்சளாவாகத் தோன்றிய N. சிவராமனும், கோபாலனாக நடத்த A. R. ராஜகோபாலனும், மற்றும் S. ராஜன், K. R. வெங்கட்ராமன், D. சேதுராமன், V. ஸ்வாமினாதன், S. வெங்கட்ராமன், T. K. கோவிந்தராஜன், K. S. S. மணி, S. முத்துகிருஷ்ணன், S. கோபால ஜயங்கார் முதலியோரும் தத்தம் பாகங்களை உணர்ந்து நன்கு நடித்து, நாடகத்தின் வெற்றிக்குப் பெரிதும் உதவினார்கள். ஸ்ரீ O. S. நடராஜன் அவர்கள் இந் நாடகத்தை டைரெக்ட் செய்தார். ஸ்ரீ V. ஸ்வாமினாதன் மேடை, கொட்டகை ஜோடனை நிர்வாகப் பொறுப்புகளை ஏற்றார்.

#### “நீதியின் தீர்ப்பு”

கெமிக்கல் தொழிலாளர்களின் முதல் தமிழ் நாடக மன்றத்தார் டிசம்பர் 27-ம் தேதியன்று ‘நீதியின் தீர்ப்பு’ என்னும் நாடகத்தை நடத்தினர். இந் நாடகத்தின் கதை, வசனம், பாட்டு முதலியவைகளை ஸ்ரீ T. P. லோகநாதன் இயற்றினார். நாடக, டைரக்டர்ஷன் பொறுப்பை A. சாம்பசிவமும், A. P. கிருஷ்ணனும் ஏற்றுக்கொண்டனர். தொழிலாளர் சங்கத் தலைவர் ஸ்ரீ P. ரெங்கசாமி நாடகத்திற்குத் தலைமை வகித்தார்.

கதை: தனசேகரம் பிள்ளை ஒரு மில் முதலாளி. அவர் மகள் பிரேமா, பாண்டியன் என்ற தொழிலாளியைக் காதலிக்கிறாள். பாண்டியனுடைய தோழன் ரத்தினம் என்பவன் பாண்டியனின் சகோதரி மல்லிகாவைக் காதலிக்கிறான். பிரேமாவின் எண்ணத்தை அறிந்த தன

சேகரம் பிள்ளை பாண்டியனை ஒழித்துக் கட்ட வழிதேடுகிறார். இதற்கிடையில் அவரே கொலை செய்யப்படுகிறார். கொலைக் குற்றம் பாண்டியன் மீது சுமத்தப்படுகிறது. நீதி ஸ்தலத்தில் பாண்டியனுக்குத் தண்டனை விதிக்கப்படும் கட்டத்தில் உண்மைக் குற்றவாளியான கண்ணப்பன் என்ற தனசேகரம் பிள்ளையின் மைத்துனன் தனசேகரம் பிள்ளை தனக்கிழைத்த இன்னல்களை எடுத்துரைத்து தான் அவரை கொலை செய்ய நேர்ந்ததை ஒப்புக்கொண்டு தனக்குரிய தண்டனையைத் தானே ஏற்றுக்கொண்டு விஷமருந்தி கோர்ட்டுக்கு வந்திருப்பதாகவும் சொல்லி முடித்தபின் கீழே சாய்ந்து உயிர்துறக்கிறான்.

நாடக மன்றத்தினரின் முதல் முயற்சி இந்நாடகம் என்பதையும், இக்கதையே அதன் ஆசிரியரின் முதல் முயற்சி என்பதையும் எண்ணும்போது, இந்நாடகம் ஒரு மகத்தான வெற்றி என்றே சொல்லவேண்டும். ஆசிரியர் ஸ்ரீ லோகநாதன் அடுத்த முறை எழுதும் போது நாடகத்தினின்று மேடைப் பிரசங்கங்களை விலக்கி ஹாஸ்ய கட்டங்களையும் இன்பமயமான கட்டங்களையும் இன்னும் அதிகமாக இணைத்து, தமது சிருஷ்டியைச் சிறந்த பொழுது போக்காக அமைக்க முயற்சி செய்வார் என எதிர்பார்க்கிறோம்.

பாண்டியனாக நடத்த T. S. முருகேசன், ஒத்திகை ஆரம்பித்த இரண்டு வாரங்களுக்குள் ஏராளமான வசன பாகங்களை மனப்பாடம் செய்து தங்கு தடையின்றி மேடைமீது பேசியது மெச்சத் தகுந்ததே யெனினும், இன்னும் சற்று நிதானமாகப் பேசியிருந்தால் இயற்கையாக இருந்திருக்கும் என்பதைக் குறிப்பிட விரும்புகிறோம்.

ரத்தினமாக நடத்த A. சாம்பசிவம் மிகவும் உணர்ச்சியுடன், தன் பாகத்திற்குரியவாறு நடித்தார். தனசேகரம் பிள்ளையாகத் தோன்றிய K. குப்புசாமி கம்பீரமாகவும், அந்தஸ்துக்கேற்றபடி



‘பிரகலாத’-ல் ஒரு காட்சி.

யும் நடித்தார். நீதிபதியாக பாகமேற்ற A. P. கிருஷ்ணனின் தோற்றம் தத்ருபமாக அமைந்தது. நடிப்பும் நன்றாக விருந்தது. கோர்ட்டு ரிஜிஸ்ட்ராராகத் தோன்றிய சாமினாதன் தன் பங்கை நன்கு செய்தார். மற்றும் K. சுப்ரமணியம், S. L. நரசிம்மன், D. மாணிக்கம், V. ஆறுமுகம், A. மாரிமுத்து, R. கிருஷ்ணசாமி, S. P. கஸ்தூரி, S. C. பழனி யப்பன், T. ராஜாராம், D. மைக்கேல், R. பாலகிருஷ்ணன், M. S. ராகவன், K. திருமலைசாமி, B. சீனிவாசன் முதலியோரும் தங்கள் பாகங்களை நன்றாக நடித்தனர். V. அன்புமணி அவர்கள் பின்னணி இசை அளித்தார்.

முத்தமிழ் கலா மன்றத்தினர் நாடகம் நடந்த சில நாட்களுக்குள் ஒரு கூட்டம் நடத்தி நாடகத்தில் நடித்தவர்களுக்கும், சில அன்பர்களுக்கும் ஒரு தேனீர் விருந்தளித்தனர். அச்சமயம் தம் முதல் முயற்சியில் ஏற்பட்ட குறைபாடுகளை இம்மன்றத்தார் அன்பர்களைக் கேட்டு அறிந்துகொண்டு அடுத்த முயற்சியில் இவைகளை நீக்கி முன்னேற்றமடையத் தீர்மானித்தது மிகவும் பாராட்டத்தக்கது.

#### செகண்டரி பள்ளிக்கூடத்தின் ஆண்டு விழா

கெமிக்கல்ஸ் செகண்டரி பள்ளிக் கூடத்தின் இரண்டாவது ஆண்டுவிழா 1955 மார்ச் மாதம் 18-ம் தேதியன்று

சேலம் ஜில்லா கலெக்டர் ஸ்ரீ P. சபாநாயகம் அவர்கள் தலைமையில் கொண்டாடப்பட்டது. இவ்விழாவிற்கு ஸ்ரீ K. K. ராமன், டைரெக்டர் & மாணேஜிங் ஏஜண்ட் M. C. I. C. அவர்களும், ஜில்லா கல்வி அதிகாரி ஸ்ரீ K. நாராயணநாயர் அவர்களும், மற்றும் மேட்டூர் விருந்து பல பிரமுகர்களும் நண்பர்களும் வந்திருந்து சிறப்பித்தனர்.

பிரார்த்தனைக்குப் பிறகு கெமிக்கல்ஸ் கூல் கமிட்டி காரியதரிசி ஸ்ரீ K. K. தர்மராஜன் அவர்கள் அனைவரையும் வரவேற்றார். தலைமை ஆசிரியர் ஸ்ரீ A. ஸ்ரீனிவாஸராகவன் ஆண்டறிக்கையைப் படித்தார். மாணவர்களின் இலக்கியக் கழகத்தின் ஆண்டறிக்கையை அக்கழகக் காரியதரிசி படித்தபின் விழாவுக்குத் தலைமைவகித்த ஸ்ரீ P. சபாநாயகம், I. A. S. அவர்கள் சொற்பொழிவாற்றினார். அவர் பேசும்போது மாணவ மாணவிகள் நன்கு கல்வி பயின்று முன்னேறவும் ஒழுங்கான பழக்க வழக்கங்களைக் கைக்கொள்ளவும் பள்ளிக்கூட ஆசிரியர்கள் நன்கு பயிற்றுவித்து அவர்களைச் சுதந்திர இந்தியாவின் சிறந்த பிரஜைகளாக வாழத் தயார் செய்ய வேண்டும் எனக் கூறினார்.

பள்ளி மாணவர்கள் ‘குந்தவை’ என்ற நாடகத்திலிருந்து சில காட்சிகளையும், ‘ஜான் அரசனும் காண்டர்பரி பாதிரியும்’ என்ற ஆங்கில நாடகத்தையும்



‘ஜான் அரசனும் காண்டர்பரி பாதிரியும்’ என்ற நாடகத்தில் ஒரு காட்சி.

மாணவிகள் 'பிரகலாதா' என்ற நாடகத்தையும் நடத்தினர். குமாரி R. ஜெயா S. உமா ஆகியோரின் - சிவன்பார்வதி நடனமும், ஜிப்ஸி நடனமும் சிறப்பாக நடைபெற்றன.

கரேஸ்பான்டென்ட் ஸ்ரீ C.S. ஸ்ரீனி வாஸன் எல்லோருக்கும் நன்றி கூறினார்.

**ஸ்ரீராமநவமி வைபவம் :**

இவ்வாண்டு ஸ்ரீராமநவமி வைபவம் ஏப்ரல் முதல் தேதி அன்று ஆரம்பிக்கப்பட்டது. அன்று பஜனைக்குப்பிறகு ஸ்ரீ M. K. ராஜகோபால் அவர்கள் ஸ்ரீ ராம ஜனன கட்டத்தைப் படித்தார். இவ்விழா ஏப்ரல் 28-ம் தேதி வரை நடைபெற்றது.

**சங்கீதக் கச்சேரி :**

கெமிகல்ஸ் உத்தியோகஸ்தர் சங்கத்தின் ஆதரவில் ஏப்ரல் 2-ம் தேதியன்று ஸ்ரீ S. R. ஜானகிராமன் அவர்களின் இன்னிசைக் கச்சேரி சிறப்பாக நடைபெற்றது. பக்க வாத்தியம் வாசித்தவர்கள் : கும்பகோணம் G. ஸ்ரீனிவாஸன் பிடி, ராமநாதபுரம் ராகவன் மிருதங்கம்.



குமாரி R. ஜெயா & S. உமா.



வெங்கட்ராமன்.

**இவரைத் தெரியுமா ?**

ஹாஸ்டல் வெங்கட்ராமனை உங்களுக்கு அறிமுகப்படுத்துகிறோம்.

ஏப்ரல் 3-ம் தேதி கெமிகல்ஸ் ஹாஸ்டல் சரித்திரத்திலேயே பொன்னொழுத்தில் பொறிக்கத்தக்க ஓர் நன்னாள். இவ்வருஷத்திய மெட்ரிகுலேஷன் பரீட்சைக்கு ஆதாராக விட்டு எங்கள் வெங்கட்ராமன் திரும்பவும் வந்து போந்தார்.

போன வருஷமும் இதே போல தானாகவே ஓய்வு நேரங்களில் படித்து, வெங்கட்ராமன் பரீட்சைக்குப் போய் வந்தார். பரீட்சையில் கேள்விகள் வேறு புதிய புத்தகங்களிலிருந்து கேட்கப்பட்டிருந்தன!

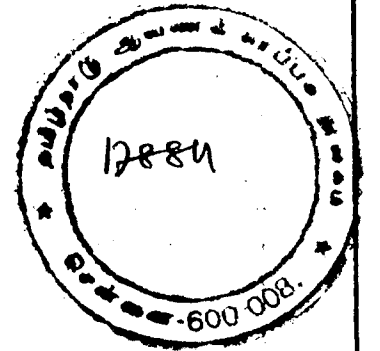
இந்த வருஷம் வெங்கட்ராமன் கட்டாயம் பாஸ் செய்து விடுவார். ஆனாலும் எங்களையும் எங்கள் 'ஹாஸ்டல் மெஸ்'ஸையும் விட்டு வெங்கட்ராமன் வேறெங்கும் போகமாட்டார். நாங்களும் வெங்கட்ராமனை அனுப்பச் சம்மதிக்கவே மாட்டோம்.

வெங்கட்ராமன் எங்களுடைய உற்ற தோழர். எங்களுடைய கேட்கலத்தில் மிக அக்கரை காட்டுகிறவர். ரொம்ப ஸ்ரேஷ்டர்ப்பு. எப்போதும் 'ஸீரியஸா' கத்தான் இருப்பார். புகைப்படத் தோற்றம் விதிவிலக்குக்கு உதாரணம். வெங்கட்ராமன் எங்கள் மத்தியில் இன்பமாக நீழி வாழ்க!

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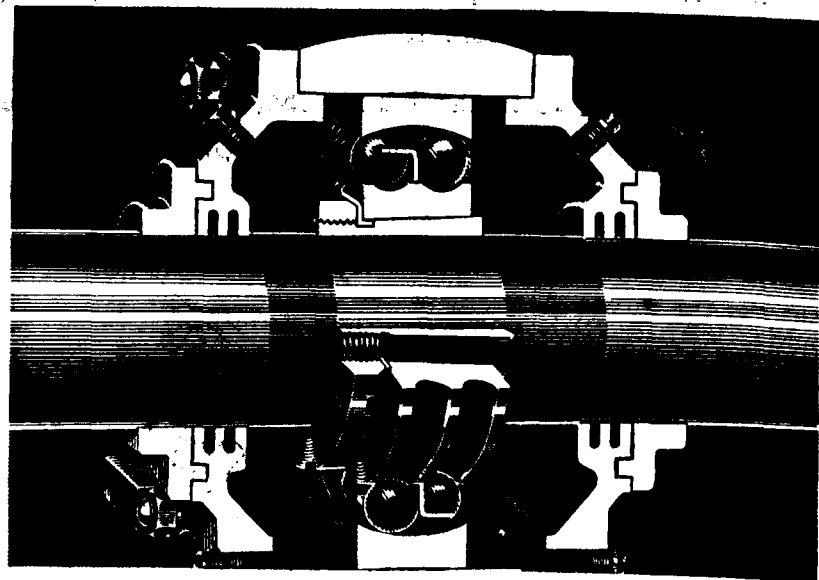
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