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The Madras Agricultural Journal

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MANAGER,

Madras Agricultural Journal,

LAWLEY ROAD P. O.

The Madras Agricultural Journal

(ORGAN OF THE M. A. S. UNION)

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EDITORIAL

The Food Policy The recently concluded United Nations Conference on Food and Agriculture held at Hot Springs, Virginia U. S. A., made a declaration to the effect that a child or adult should get the nourishment necessary for full health and that the primary responsibility lies with each nation for seeing that its own people have the food needed for health and life. This leaves no room for any country to take a light view of the food situation that is confronting the Allied Nations at present. In his address to the delegates to the above conference, President Roosevelt, while accepting the above declaration on behalf of the United States, drew pointed attention to the importance of the problem both during war and peace time and called for a sound agricultural programme for the future. The matter becomes all the more important when it is realised that no nation ever had enough food to feed all its people as we now know how human beings should be fed. According to statistics, India grows but 25 million tons of rice as against 27 million tons she consumes and 10 million tons of wheat as against 9½ million tons required by her. In the matter of *cumbu, cholam* and *ragi* which are the other food grains largely consumed, India is said to be self sufficient, while she is not producing enough of her requirements in pulses. To meet this deficit and to supply the needs of some of the adjoining territories that have become a liability on her due to this global war, a Grow More Food campaign was inaugurated in India. The movement has since gained momentum and it is claimed that larger areas have been brought under arable farming and that production has been substantially increased. The various Provincial and State Governments have to their credit enactments of auxillary and amelicrative measures, such as rent-free assignment of lands, granting of concessions to cultivators, providing extra irrigation facilities, distribution of manures and seeds etc. Yet, with all these efforts we are told that there is shortage of food stuffs in many localities and that especially the poor class of people are left without adequate food supplies. Various causes are attributed to this situation of which hoarding, reluctance to release stocks by producers and merchants and the existence of black markets are said to be the most important. While we agree with this view and appreciate the sincere efforts of the Government to ease the situation, we urge that the production issue is faced more squarely. An unbiassed and critical review of the achievement of the Grow More Food campaign during the last two years would, we believe, bring out

clearly what further action should be taken to step up production of each of the essential commodities. It is for consideration whether the extension of cultivation, especially to the derelict land has diffused labour, work cattle, implements and fertilizers from lands under normal cultivation and thereby reduced the outturn from such lands. In the enthusiasm for extending the area under food crops we should not loose sight of this aspect. Every effort should be made to keep up or raise the level of yields from lands already under staple food crops by assuring adequate facilities for irrigation, manuring and labour supply. If necessary, special staff should be employed in particular tracts to do intensive propaganda on improved methods of cultivation. Experiments on District Farms have shown that growing a green manure crop or applying oil cake, using seeds of improved strains, thin-sowing of nurseries and close planting enhance the yield of paddy by 20 to 30 percent. If all the paddy tracts of this Province adopted these improved methods, probably the deficit in the supply of rice may be made good to a large extent. Now that we have passed through the preliminary and pioneering stages in the Grow More Food campaign, it is very desirable that a long-range view of the whole problem is taken by the Government and a definite policy laid down as the scope for planned agriculture is immense in this country. In previous issues of this Journal, we have suggested the encouragement of local production of artificial and organic manures, insecticides and fungicides, and for the provision of warehouses for storing produce free from the depradation of vermins—factors which have a direct bearing on increased production. We also suggest that greater attention may be paid to the encouragement of animal husbandry and dairying, including goat and poultry breeding, and development of inland fisheries and intensive sea fishing. Such a step would provide the nation with a variety of food stuffs and a nourishing diet which will keep up the vitality of its people and make them work effectively and efficiently in the defence of the country. We hope that the matter will receive the attention of the authorities concerned and that we will soon have long-range policies formulated in the matter of food production so that all people, rich and poor alike, are assured of the supply of adequate quantities of proper food at reasonable prices.

Birthday Honours Among the recipients of the Birthday Honours we are glad to find the names of Mr. P. M. Kareghat, I. C. S., who has been knighted and Mr. A. R. C. Westlake, I. C. S., who has been made Companion of the Indian Empire. Mr. Kareghat has long been connected with agricultural development in this country as the Vice-Chairman of the Imperial Council of Agricultural Research. Mr. Westlake, who is the Secretary to the Government of Madras in the Development Department was for sometime Director of Agriculture in this Province and was responsible for reorganising and strengthening the propaganda wing of the Department. He took a special interest in the activities of the Madras Agricultural Students' Union and this Journal. We offer our hearty felicitations to these distinguished civilians.

Studies on Soybeans in Sind

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Introduction The Soybean, *Glycine max* L. is a native of Eastern Asia. The culture and use of the Soybean are recorded in the ancient Chinese literature and undoubtedly date from a period long before the time of written documents. It is the most important legume in China where it is one of the most essential articles of food.

There is sufficient evidence to show that soybean has also been cultivated in Northern India and Burma since a long time. Major T. E. T. Aitchison (1881) found the soybean largely cultivated in the Kuram valley, North-west Frontier Province, especially in the Kuram district, occasionally in Hariab and also frequently as a weed in the cultivated fields. Hooper (1911) in his investigations on soybeans has recorded seeds aggregating perhaps into nine distinct varieties, collected from Burma and from places situated on the lower slopes of the Himalayas extending from Kashmir to Darjeeling. Woodhouse and Taylar (1913) describe nine Indian varieties secured from Darjeeling, Bankipur and Bhagalpur. Most of the Indian varieties have slender twining stems, small pods and small seeds. They resemble the wild soybeans much more closely than do the varieties of China and Japan. The existence of different local names for soybeans in Bengal, Assam, Nepal and the North-west Frontier Provinces is also an evidence of its ancient culture in India.

With the opening of the Lloyd Barrage in Sind, investigations into the possibilities of cultivation of soybean in Sind under the perennial irrigation system, were started at the Agricultural Research Station, Sakrand, in the year 1929; but all attempts failed until 1931 when for the first time a successful crop was grown for seed. Several varieties of soybeans obtained from abroad and from various provinces of India have been tested. The small seeded and late-maturing varieties have succeeded fairly well under the Sind conditions. It has been found difficult to establish foreign big-seeded varieties as their germination when sown in beds is very low and besides they are subject to white ant attack which does the most damage.

Cultivation method Soybean has been found to succeed on a variety of soils varying from sandy loam to loamy soils. The crop is rather sensitive to *Kalar* (alkali soils) and cannot be grown in stiff soils. In the United States of America, artificial inoculation of the land that has not previously grown soybean has been found necessary, while under the Sind conditions

the inoculation of land has not been found to result in any extra advantage. The last fortnight of June has been found to be the suitable time of sowing as nothing is gained by sowing the crop earlier. The crop whether sown early or late matures at the same time, *i. e.* in December. A spacing of 3 to 4 ft. between rows and 6 to 9 in. between plants has been found to give high yields. When the crop is grown for fodder purpose, the distance between the rows should be $1\frac{1}{2}$ to 2 ft. Under the Sind conditions, an average yield of 825 lb. of seed per acre has been obtained. The soybean crop was grown for fodder and it yielded on an average 10,300 lb. of green fodder in a single cutting, and did not give further cuttings. The yield of fodder when compared to that of *Jowar (Andropogon sorghum)* which yields about 20,500 lb. in one cutting, is very poor.

Description of varieties tested Twenty one varieties of soybeans obtained from different provinces of India and the foreign countries, viz. U. S. A. United Kingdom and South Africa have been tried at Sakrand. These varieties for the sake of convenience have been classed into two groups, Indian (obtained from different provinces of India) and exotic, as they form two distinct groups. The Indian varieties have small seeds with oil content varying from 13 to 16 percent while the exotic varieties have big seeds with oil content varying from 16 to 21 percent. The word Indian does not necessarily imply that the origin of the varieties which fall in this group is in India. The history of these varieties is not known and some of these viz. Behrum and Mir-John-Hat which resemble foreign varieties in their habit of growth may have been originally imported from abroad.

(i) **Indian varieties** The following eight Indian varieties, the first six of which have a spreading habit of growth and the last two with bunch habit, have been tried at Sakrand.

Variety	Source from where obtained	Variety	Source from where obtained
Spreading types			
1. Pusa Yellow	Pusa	5. Burma Yellow	Rangoon
2. Pusa Chocolate	,,	6. Pengype	Madras
		Bunch types	
3. Pusa Black	,,	7. Behrum	do.
4. Punjab Yellow	Punjab	8. Mir-John-Hat	Ranchi

(a) *Spreading varieties* The basal portion of the stem is stout and upright and the other portion weak; the branches specially the elongated terminals are more or less twining and are usually weak. The leaves are trifoliate and the leaflets are ovate lanceolate in shape and pale green in colour. The stem, leaves and pods are pubescent and the pubescene is found in two colours, whitish (termed as grey by Piper and Morse) and light fawn to tawny. All the varieties grown at Sakrand have purple flowers. The pods form in clusters of 2 to 3, and on account of long internodes, they appear scattered. These are small in size and have 2 to 3 seeds. Three seed colours, greenish yellow, chocolate and black were noted among the varieties tested. These varieties take 180 to 190 days, to ripen when sown in June.

(b) *Erect varieties* There are only two Indian varieties, viz. Mir-John-Hat and Behrum which come under this class. The stem of these is stout, upright and branching. The leaflets are ovate and big and they vary in number from 3 to 5 per leaf. The stem and leaves have dirty white (termed as greyish by Piper and Morse) pubescence. The flowers are purple and slightly bigger than those of the spreading varieties. The pods are formed in clusters of 3 to 5 and are slightly bigger, and the seeds slightly heavier than those of the spreading varieties described above. The ripening period of these beans is about 160 days when sown in June.

(ii) **Foreign varieties** Thirteen samples of soybeans, listed below, were obtained from abroad and tried at Sakrand.

1. Shangai	2. Larido	3. Chinese White
4. Dalny	5. Vilamskot	6. White Morse
7. Mommoth Yellow	8. A. K. White	9. Haberlandt
10. Barchet	11. Otootan	12. South African Brown
13. American Eye brow		

The habit of growth of all the varieties, except Barchet and Otootan, is erect and branching with a well defined main stem. In Barchet and Otootan varieties, the plants are slender and bushy and have a tendency to lodge. In erect as well as slender varieties, the leaves are trifoliate and the leaflets are usually ovate lanceolate in shape. All the varieties are pubescent. The erect types have the habit of fruiting in clusters while the slender types have the pods scattered. The pods are also pubescent and the pubescence occurs in two colours, light fawn and dirty white. All the varieties, except American Eye brow, have unicoloured seeds of straw yellow, black or brown. The American Eye brow variety has black seeds with brown saddle. The maturity period of these foreign varieties varies from 90 to 155 days. Almost all the imported varieties have well developed big seeds except Barchet and Otootan varieties which have comparatively smaller seeds.

Acclimatization The foreign varieties gave very poor germination in the first year. The stand and the growth of the crop were not satisfactory. The small seeded varieties, viz. Barchet and Otootan, had better germination and stand and seemed to be hardier types than the others. The seed obtained from the foreign varieties with straw yellow colour was smaller in size than the originally imported seed. In most of the plants, the seed was shrivelled. All the varieties were subject to white ant attack. The following statement shows the incidence of white ant attack, the percentage of plants with plump seed and the acclimatizing capacity of the different varieties.

Variety	No of plants soon after germination	Mortality		Final stand		Plants with plump seeds % (P)	Acclimatizing capacity seeds of variety (F × P)/100
		No. of plants	Percent	No. of plants	% (F)		
Yellow coloured seeds							
Shangai	805	606	75	199	25	23·2	5·8
Chinese White	155	121	78	34	22	82·3	18·1
Haberlandt	191	46	24	145	76	61·5	46·74
A. K. White	396	164	41	232	59	38 0	22·42
Mammoth Yellow	212	130	62	82	38	30 5	11·59
Other seeds							
Otootan (black)	291	160	55	131	45	100 0	45 00
Barchet (brown)	289	183	37	106	63	100 0	63 00
South African Brown	172	60	35	112	65	89·3	58·04

It will be seen from the above table that the black and brown seeded types are comparatively hardier and have better acclimatizing capacity than the yellow seeded types. Among the yellow seeded varieties Haberlandt has behaved comparatively better.

Maturity The observations made by Woodhouse and Taylor (1913) at Sabour, India, show that newly imported American varieties take a considerably shorter time to mature at Sabour than in America, but the plants from acclimatized seed mature somewhat later than those from freshly imported seed. Our observations recorded at Sakrand confirm the first statement of Woodhouse and Taylor, *i. e.*, the plants raised from the newly imported seed take considerably shorter period to flower and mature than that taken in the original home. The observations do not corroborate the second statement of the above authors. The data obtained here shows that in the subsequent years, the flowering and the maturity period has not been necessarily greater than that of the first year and in certain cases the period is even shorter. Probably the variation in flowering and maturity period is due to season and varieties. In almost all the varieties, the time taken to flower and to mature in different years is never more than that taken in their original home. A statement of the observations recorded at Sakrand is given in the following table. These varieties were sown in the beginning of June in all the years.

Variety	Days taken to flower					Days taken to mature				
	In U. S. A.°	At Sakrand				In U. S. A.°	At Sakrand			
		1933–34 Freshly imported seed	Acclimatized seed 1934—35	1935—36	1936—37		1933—34 Freshly imported seed	Acclimatized seed 1934—35	1935—36	1936—37
A. K. White	50—55	40	37	49	50	110	101	110	120	112
Haberlandt	50—55	45	40	47	46	125	103	101	121	108
Mammoth Yellow	85—90	55	52	63	54	145	138	126	125	128
Otootan	90—95	65	92	78	90	170	151	155	148	142
Barchet	80—85	65	87	79	89	160	151	155	144	139
Morse White	50—55	40	51	40	...	130	100	115	108	...
American Eye brow	35—40	40	...	...	...	110	98	...	...	...
Larido	75—80	50	...	...	...	140	127	...	...	...

° Data from Piper and Morse (1923).

Natural cross pollination Piper and Morse (1923) conclude from the observations at the Arlington Experiment Station that even when the test rows of several varieties are grown side by side, the percentage of hybrids is perhaps not one individual in two hundreds. They also find that the hybrid seeds can be recognised by the presence of peculiar markings on the seed. Heterozygous plants can be distinguished by the appearance of the pods at the top of the branches ; such pods are more tumid, less hairy and of thinner texture. Woodhouse and Taylor (1913) conclude from the observations made at Sabour that natural crosses do not occur on the plains of India to such an extent as in America, and that the crossing occurs more frequently in the more temperate climate of America and the Darjeeling Himalayas.

At the Agricultural Research Station, Sakrand, Indian varieties of yellow, black and chocolate seeds were grown in consecutive rows in the first year. In the year 1932, a few plants (3 plants in a bed with a population of about 500 plants) were found in Pusa yellow variety which had oddly coloured seeds such as smoky yellow and yellow with brown bands. The number of such plants compared with total number of plants was very small. The seeds were grown separately next year and were found to segregate into pure yellow and other shades of yellow which were similar to a natural hybrid.

The foreign varieties tried at Sakrand, were impure in flower character and consisted of both white and purple flowers. Thirty-six single plants with white and purple flowers were selected from three varieties, viz. (1) Haberlandt, (2) A. K. White and (3) Mammoth Yellow and sown during the year 1934—35. Out of these 36 single plant cultures, 30 (13 white flowered and 17 purple flowered) bred true, while six (all purple flowered), showed segregation. During the next season, *i. e.* 1935—36, further selection of single plants was made from the cultures which had bred true to type. In all, 29 single plants were selected which were outwardly pure for flower character. The behaviour of these single plants is shown in the following table.

Variety	No. of single plants selected and sown in 1935-36			Behaviour of the selected plants				
				No. of cultures which bred true		No. of cultures which showed segregation		Total
	White flower	purple flower	Total	For white flower	For purple flower	White flower	Purple flower	
Haberlandt	7	2	9	5	—	2	2	9
A. K. White	8	2	10	8	—	—	2	10
Mammoth Yellow	—	10	10	—	10	—	—	10
	15	14	29	13	10	2	4	29

It was seen that out of 29 cultures which were pure for flower character, 23 bred true and 6 showed variation. These results clearly show that the exotic types are more subject to natural cross pollination than the Indian varieties.

Genetic behaviour of the flower colour Piper and Morse (1923) found that the mode of inheritance of flower colour is in accordance with the simple Mendelian type and that the purple colour of the flower is dominant over white colour. Woodworth (1923) reported that the purple colour was dominant to white and segregated in the F_2 in a 3:1 ratio. At Sakrand, segregations in the progenies of natural crosses found in the pure strains which were isolated from foreign varieties were recorded. The number of plants under observation was less as there was considerable mortality due to white ant attack. The goodness of fit has been worked out.

Variety & strain no.	Character of flower	F_1 phenotype obtained by natural crossing	Segregations in F_2		Goodness of fit
			Purple	White	
A. K. White—86	Purple	Purple	40	11	$\frac{1.75}{2.08}=0.84$
Haberlandt—15	Purple	Purple	21	4	$\frac{2.25}{1.46}=1.54$
		Total	61	15	
		Expected on 3 : 1	57	19	$\frac{4}{2.53}=1.57$

In the F_3 the following segregations were observed.

No. of cultures	Nature of parent	Behaviour of progeny	Frequency	
			Observed	Expected
4	Purple flower	Pure	1	1·5
		Segregating	3	3·0
2	White flower	Pure	2	1·5

In F_3 the phenotypes segregated as under :—

Phenotype like F_2	Purple	White
1	5	3
2	44	11
3	11	7
Total observed	60	21
Expected on 3 : 1	60·75	20·25

$\frac{\text{Dev.}}{\text{P. E.}}=\frac{0.75}{2.63}=.29$ The fit is good.

The behaviour of F_3 confirms the mode of single factor inheritance of flower character.

Acknowledgements The authors' thanks are due to Messrs K. Ramiah, Indore and C. M. John, Coimbatore, for carefully going through the manuscript and giving their valuable suggestions.

References.

1. Du Toit F. M. (1932) *Dept. Agric. Union S. Africa Bull. 107.*
2. Ferree C. J. (1929) *The Soy Beans and the New Soya Flour. William Limited, London.*
3. Hawkins L. A. *Soya bean a valuable legume crop. International Harvester Company Agric. Extension Dept. Chicago U. S. A.*
4. Hayes, H. K. and Garber R. G. (1927) *Breeding crop plants. McGraw Hill Book Company, N. Y.*
5. Hooper, D. (1911) *Glycine hispida (Soy bean), Agric. Ledger No. 3* (original not seen.)
6. Morse W. J. (1927) *U. S. Dept. of Agric. Farmers Bull. 1520.*
7. Piper, C. V. and Morse, W. J. (1923) *The Soy bean. McGraw Hill Book Company N. Y.*
8. Woodhouse E. J. and Taylor C. S. (1913) *India Dept. Agric. Mem. Bot. 5 (3)*
9. Woodworth, C. M. (1923) (Original not seen) Quoted from Hayes and Garber, p. 210 (loc. cit).

Sorghum Grain for Food

By M. A. SANKARA AYYAR, B. A., B. Sc. (Ag.),

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Sorghum (*Cholam, Jola* or *Jonna*) is the second important grain crop in the Madras Presidency. It is grown annually on an area of about five million acres in this Province and on about 36 million acres in India. The sorghum grain is the main article of food of the rural population in the dry areas. It is used extensively as human food in Africa, Asia Minor and China also. It is the chief diet of the natives in Africa. It is reported that sorghum grain is the most important source of flour in Egypt and is used in bread-making mixed with wheat, barley and fenugreek or beans.

Now that there is scarcity of rice in many parts of the Province and the people have to manage with available substitutes an attempt is made in this brief note to indicate the common methods of utilizing sorghum. There may be slight variations or modifications in the different processes involved in preparing the same or similar product in different localities. The object of this note is only to present an idea of how sorghum can be prepared for food.

The Sorghum grain is a naked grain. That is, the grain obtained on threshing the earheads and which is sold in the market has no protective covering of husk as in rice. Threshing separates the grain from the husk. The colour of the grain may be white, yellow, red or rarely brown. The colour is confined only to a thin outer layer of the grain which is the seed coat. In all the grains the inner portion, called the endosperm, is white.

In food value the sorghum grain is superior to rice though only second to wheat. It is richer than rice in protein content and richer than wheat and infinitely richer than rice in fat content. The protein content of sorghum grain varies from 8 to 12 per cent and the fat (oil) content from 1·5 to 5 per cent in the different South Indian varieties. The analyses of samples of

sorghum, rice and wheat, according to Dr. Aykroyd (*Government of India. Health Bulletin No. 23, 1937*), are given in the following table.

	Moisture	Protein	Fat	Mineral matter	Fibre	Carbohydrate
Sorghum	11·88	10·42	1·93	1·76	...	73·99
Rice (raw, milled)	12·96	6·85	0·55	0·50	...	79·14
Wheat (whole)	12·77	11·77	1·45	1·49	1·20	71·30

For most of the preparations, except when the dry grain is converted into flour, the outer seed coat or bran is removed by pounding it lightly in a wooden mortar moistening the grain slightly by sprinkling water. The pounded grain is winnowed and washed with water. The amount of material lost in this process varies from 10 to 25 per cent depending upon the variety.

Annam or Cooked grain The grain after removal of the bran is washed and cooked as it is or after breaking it into small bits in a stone mill. About twice the quantity of water is used for cooking. This is similar to cooked rice and consumed with curry and butter milk. To make *pongal* a small proportion of greengram *dhal* is mixed with the grain and then cooked.

Sankatti, Mudda or Kali The grain after removal of the bran is dried and ground into coarse powder in a stone mill. The finer portions of the powder are sieved out. The coarse powder thus obtained is cooked with about three times its quantity of water. When the whole matter is cooked to the consistency of paste, the finer portion of the powder is also added, and mixed well and cooked. A thick pasty product thus obtained is rolled into balls and eaten. This is considered to be more easily digested than the *annam*.

Kanji or Kulu The process of making this is the same as that for *sankotti*, except that a higher proportion (5:1) of water is added, so that the cooked matter is in a more liquid state.

Rotti This is the most common preparation of sorghum in the Bellary district and the adjoining Deccan tract which is the main sorghum area in India. The whole grain is ground into fine flour and sieved to remove coarse particles or bits of seed coat. The fine flour is made into dough by adding water preferably hot water. The dough is kneaded well and is divided into small balls of the size of a tennis ball. The balls are spread out by hand to form circular discs of about quarter of an inch or less thickness and eight to ten inches in diameter. This is baked on a hot pan. A small quantity of wheat or blackgram flour and a few pinches of salt may be added to improve the quality of the sorghum flour and the taste of the product. *Rotti* is sometimes preserved for use for about a week.

Dosai or Pan cake The fine flour obtained by grinding the whole grain is used for this, or the whole grain or the grain after removing the bran is soaked in water and ground into a paste. Sorghum alone or sorghum and rice is ground first and a small quantity of similarly prepared paste of black gram is added. Salt, chillies and onions are added according to taste; butter milk may also be added. The paste is made into *dosai* by baking on a hot pan on which oil is smeared. Sorghum mixed with red gram and black gram *dhal* may be soaked in water, ground into thick coarse paste and made into another kind of pan cake known as *adai* also.

Pops Another common or easy preparation of sorghum is the pop (*pori* or *pelalu*). All sorghums do not pop well. The grain of the variety known as *Konda jonna* in the Northern districts and *Alangara cholam, Vensamarai cholam* or *Talaivirichan cholam* in the Central and Southern districts is the best for popping. The grain of this variety pops better than that of others. When small quantities (a handful at a time) of dry grain is put on a hot pan or pot and stirred, the grains 'pop'. The pops are taken off the pan or pot immediately. The pops can be made into balls mixed with jaggery and preserved for use. The pops as such or pounded can also be used mixed with milk and sugar, or butter milk, salt and chillies.

Other preparations which are not widely known but common in some places are *kudumulu* or *hidlee*—for which the sorghum flour is mixed with cowpea or Bengalgram and condiments, converted to paste, made into balls or thick flat cakes and cooked in steam; *chakkadam*—for which the flour is moistened with boiling water, salt added, made into small balls, cooked in steam, the cooked balls pressed in a hand press with perforated socket and the pressed stuff fried in oil; and *burelu*—for which the sorghum flour is mixed with jaggery, moistened with water, made into small balls and fried in oil. These show that sorghum can be substituted for rice to prepare many products for every day consumption.

A Trial with Cocanada Cottons

By K. SANKARAIAH,

Thumadu, Kandukur Taluk, Nellore District

Since there had been a good market for the short staple cotton of white and red mixture and there had been increasing demand for pure red cotton I had to replace the local variety by a suitable one. For this purpose I conducted a trial in 1941-42 with the following varieties: (i) local (Kandukur), (ii) Kanigiri (Nellore district) (iii) Ambapuram (Guntur district) and (iv) X-20—a 'Cocanada' strain of the Madras Agricultural Department. All these varieties are classed as 'Cocanadas' by the trade.

The trial was conducted in black soil of medium fertility. A rectangular block of the field was divided into seven plots and the different varieties were sown in these in the following arrangement: Plot 1—local, plot 2—X-20, plot 3—local, plot 4—Kanigiri, plot 5—local, plot 6—Ambapuram and plot 7—local. Each plot contained 8 rows of plants 165 ft. long and

5 ft. apart, of which the produce of 6 middle lines of each plot was harvested separately for comparing yields. One line of redgram was sown to demarcate the boundaries between plots.

Cotton is not grown in this tract as a pure crop. It is grown mixed with a millet, like *ragi (Eleusine coracana)* or *arika (Paspalum scrobiculatum)* and pulses. About one-sixteenth by measure of pluse seeds are mixed with the millet seed. Following the local practice cotton was sown as a mixed crop with *ragi*. The crop was sown on the 4th September 1941. Ten days after sowing, gaps were filled by sowing fresh seed and crowded plants were thinned out to a spacing of 4 in. between plants.

The harvest of cotton was commenced on the 11th March 1942. Each plot was marked out by four pegs at the corners and a rope tied all round excluding the two outer rows and 5 ft. of every row at either end. The weight of kapas from each plot was weighed soon after harvest. The record of yields of the different plots are presented in the following table :—

Date of harvest	Weight of Kapas in lb.						
	Plot 1 Local	Plot 2 X-20	Plot 3 Local	Plot 4 Kanigiri	Plot 5 Local	Plot 6 Ambapuram	Plot 7 Local
11—3—1942	19	31	16	13	10	14	20
22--3—1942	5	6	16	8	5	4	5
3—4—1942	2	1	4	4	6	4	4
23--4—1942	1·5	2	2·5	1·5	2·5	1·5	1
Total	27·5	40	38·5	26·5	22·5	23·5	30

The area of each plot is $\frac{1}{160}$ acre. When the yields of the three new varieties were compared with those of the 'local' on either side, it was observed that X-20 yielded 21 percent more and Kanigiri and Ambapuram yielded 13 and 11 percent respectively less than the local. Hence X-20 was the best. Another factor in favour of X-20 was the proportion of lint to kapas. The ginning percentage of X-20 was 30 whereas the other varieties gave only 25 percent of lint.

When the money value was considered it was noted that the offer for the 'local' was Rs. 20 per candy of 500 lb. of kapas and for the X-20 kapas Rs. 25 per candy. On lint basis, the offers were Rs. 80 and 100 per candy for 'local' and X-20 respectively. The cost of seed was not taken into account as the seed is given towards ginning wages which is the local practice.

The merchants fix the price of kapas based on the assumption that the ratio of lint to kapas is 1:4. Since the proportion of lint in X-20 is greater than in the local cotton, selling as lint is more profitable. So I got the kapas ginned and sold the lint; and the seed which was given as wages for ginning was purchased for cash for feeding cattle.

While the local cotton spins to 12 to 15 counts, X-20 spins to 20 counts, as certified by the Manager, All India Spinners Association, Andhra branch, Kandukur. After a test he opined that X-20 was very satisfactory and was in no way inferior to Kanigiri red cotton which he had been mainly purchasing for his business, and that its cultivation may be extended and would find a ready market with him.

It is obvious from the particulars furnished above that X-20 cotton, a strain evolved by the Madras Agricultural Department is a better yielder, fetching an enhanced price of Rs. 10—13—0 per acre more than the local variety in Kandukur taluk (Nellore district). The harvest of X-20 can be completed earlier than the local by about a fortnight, as it is early flowering and maturing. Saving of watchman's wages for a fortnight is an additional profit. Since X-20 is a red cotton, unlike the local variety which is a mixture of white and red, it has a better market.

Under these circumstances I may say that the public funds utilised for cotton research has been spent fruitfully to the advantage of the cultivator and it is left to my co-cultivators to make the best use of the fruits of research.

SELECTED ARTICLE

Cultivation as an aid to Soil Fertility

By E. BATCHELOR, *Sherborne. Dorset*

Geological and astronomical authorities place the age of our world at somewhere between two and three thousand million years, and that of the consolidation of its crust at about two thousand million years. Since then the agents of disintegration and denudation—water, atmosphere, heat, cold, and frost and for some hundreds of millions of years, the roots of vegetation, together with rabbits, moles and earthworms—have, mainly through the solvent action of rain water, transformed the solid rock into sand and clay, and transported these products, together with minerals in solution, into the rivers, seas and oceans. The geological formations resulting therefrom after being raised above sea level, have repeatedly been subjected to the same processes of disintegration and denudation.

Observation in a railway cutting or quarry will frequently show slightly disintegrated rock at a depth of only a few feet below the surface. Above this the rock can be seen to be in progressive stages of disintegration until, at the surface, the solid formation has been transformed into fine sand or clay and is ready for erosion by rain and surface flow into adjoining streams. What is now soil on the land surface was but a short time ago, as measured by the geological clock, solid rock some feet below the surface. The rates of disintegration and denudation are clearly interdependent and vary with climatic conditions.

The use of tillage implements accelerates the rate of disintegration and denudation.

Soil fertility enhanced by tillage The mineral constituents of a plant are taken up in solution in water, but their solubility varies greatly; for example, that of silica is very much less than that of calcium. In this country disintegration is effected mainly by solution in the surface flow of water and by solution in the rain water sinking into the soil to the ground-water. The solvent power

of rain water, over that of pure water, is due to the presence of carbonic, nitric and sulphuric acids, absorbed from the atmosphere. As rain water dissolves the mineral constituents of a solid mass of unweathered rock, or of the soil derived therefrom, a part of the mineral solutes is removed by surface and ground-water flow and is lost as plant food in the vicinity of that rock or soil. Part is re-precipitated elsewhere in the rock or soil. During intervals between rainfalls, water, impelled by the pressure of surface tension (capillarity), rises to the surface of the soil and evaporates leaving deposits of minerals in the surface soil. As each particle of mineral is dissolved, the surface area of the parent rock or soil exposed to the action of water becomes larger, and the mineral content of the water in a cubic foot of rock or soil thereby increases. The rate of solution of a mineral when re-precipitated from water moving in the soil, or when deposited by the evaporation of the water containing it, is greater, often far greater, than when the mineral is first exposed to the solvent action of water on the surface of the unweathered rock. *It follows, therefore, that the rate of mineral solution, and hence the fertility of a soil, is enhanced by exposure to the action of atmosphere and rain.* This is true even if the surface is untilled; by tillage the rate is increased. When, for example, land is bare or summer-fallowed, and there are no plants to assimilate the minerals precipitated in the soil by the process of disintegration described above, considerable quantities of these minerals are accumulated, and the land is described as 'regaining fertility'. The ensuing crop will then be larger than if the soil had been continuously cropped; but the fact that continuous cropping results in a smaller yield is no justification for regarding the soil as 'exhausted'.

Manuring: *Green manuring* When green manuring, particularly with legumes, is practised, some part of the elements essential to the following crop, especially nitrogen, are fixed in the plant and are not eroded as they might be were the land bare fallowed. The ploughing up of old pasture land may be regarded as a kind of green manuring. It is frequently asserted that the keeping of land under grass is a method of building up a reserve of fertility, and that the humus so obtained is indispensable for the maintenance of fertility. However, no satisfactory definition of what is meant by 'humus' has yet been framed; nor has the writer seen any estimation, in numbers, of this 'reserve', nor of the stores of so-called 'humus'. The presence of plant roots and the ploughing in of stalks improves the texture of some soils until the roots and stalks are disintegrated and the soil settles down; *drainage and aeration may be improved through their presence.* These effects will increase fertility without the supply of minerals.

Animal manuring The value of urine and dung for improving vegetation was obvious to primitive man. Elements present in organic form in animal excreta have to be retransformed into an inorganic form before they can be dissolved in water and assimilated by the plant. There is no proof, so far as the writer is aware, that animal excreta accelerate the disintegration of the soil by natural agents. In a self-supporting area where no cattle foods or fertilizers are brought in from outside, and where the most careful conservation and application of the dung to the soil is practised, if there were no disintegration of the soil the losses of minerals in the produce removed from the area, and by erosion in the surface flow and ground water must in a very few years leave the soil barren in so far as profitable cultivation is concerned.

Such were the conditions in this country until the introduction of artificial fertilizers about a century ago (potash much later). Yet the fertility of the soil had continued to improve from the earliest times. *It follows, therefore, that the creation and maintenance of the fertility of the soil must be sought basically, in the disintegration of soil and subjacent rock.*

Continous Corn growing From the above arguments it follows that a uniform crop can be grown continuously on the same soil without animal manure, green manure or mineral fertilizers, provided the soil contains the minerals indispensable to the crop, and the crop is suited to climatic conditions. It may be objected that this is mere theory and is contradicted by practical experience. It is probable, however, that experience generally outside these islands is in accordance with the theory, e. g. in Russia, the United States of America, Canada, Australia and India. In the Central Provinces of India, wheat is grown continuously without fallow and without manure, and the yield per acre has increased since it was first observed and recorded in the 'sixties of the nineteenth century. The facts are in accordance with theory in Great Britain also, as was proved by Tull two centuries ago, and by the experiments at Rothamsted in growing wheat without manure or fertilizer continuously for the past 100 years.

It may be objected that rotation gives a larger or more valuable yield per acre in this country than abroad. The average yield of wheat per acre for the last 10 years is stated to be 32 bushels (2000 lb.) in Britain and only 13 bushels (820 lb.) in the United States of America. If it is assumed that the rotation in Britain is one of 4 years, the average annual yield per acre is only 8 bushels of wheat; if that of the corn in one other course of the rotation is included, the average annual yield of corn is only some 1000 lb. Most of the land sown with wheat in the United States of America is not under rotation, hence the reality, where *bread* is the sole criterion, is very different from the impression given by these figures. So far as the writer is aware, experiments have not been made in this country since Tull's time to ascertain the maximum uniform wheat crop obtainable without manure or mineral fertilizers; the experiments at Rothamsted have not been conducted precisely to that end. (*J. Minist. Agric. December 1942*).

Abstracts

Soil cultivation and Increased production by J. H. Hofmeyr, *Fmg. S. Afr. Vol. 17, No. 200, Nov. 1942.* Where moisture is in any way a factor limiting production and that includes the extensive maize growing areas of the Orange Free State, as well as other parts of the country, it is absolutely essential that rigid weed control should be practised in order to increase production or even, in some cases, to produce a crop at all. *Weeds and drought have an identical effect on the growth of maize and other agricultural crops.* Hence, the drier and more unfavourable climatic conditions are, the more imperative it is that effective weed control should be practised—and the sooner the better.

The production of maize may be considerably increased, without extending the cultivated area, merely by practising more effective weed control. Even for the more economical production of maize, better weed control by hand and inter-row cultivations are essential.

Although the use of a ridging plough for the inter-row cultivations of maize often yields excellent results, this implement should be judiciously used. The use of an ordinary cultivator appears to give more constant and generally satisfactory results provided the weeds are subsequently hoed by hand in the rows. The ridging plough also requires more tractive power and greater effort in handling than the ordinary cultivator. An additional disadvantage is that it leaves the land uneven, making subsequent ploughing more difficult.

The maintenance of a mulch appears to be unnecessary but generally speaking, under dry land production the number of cultivations, as well as the time of cultivation should be determined primarily by the appearance of weeds.

The additional cultivation just to maintain the mulch apparently have no or little effect on yield, and only increase production costs.

Under the prevailing conditions, when the scarcity of fertilizer and labour may definitely have a limiting effect on production, especially if the area under cultivation is injudiciously extended, it is essential that due account should be taken of the factors mentioned. This can be done only by thorough cultivation of the soil planted and the complete eradication of weeds in order to increase the *yield per morgan* as effectively as possible. The ploughing, fertilizing and planting of extensive lands frequently means a wastage of valuable fertilizer if the yield is low as a result of poor weed control due to a shortage of labour. In that case the weeds enjoy the benefit of the fertilizer.

In many cases it would pay farmers to bear in mind that the application of fertilizers cannot make up for neglect of proper weed control and the other operations associated with thorough cultivation. Not only the agricultural crop but the weeds also are nourished by the fertilizer and frequently the competition set up is to the detriment of the former, especially where moisture conditions are not so favourable. *(Author's abstract)*

Effects of weeds on growth of sugarcane. According to the *Report of the 61st Annual Meeting of the Hawaiian Sugar Planters' Association (1941)*, it had been previously shown that heavy losses of dry matter in plant cane were produced by allowing weeds to develop during the first six weeks. It has now been shown that, provided weeds are controlled during that period, later weed growth has a less marked effect. When controlled during 12 weeks in all, weed growth had but little effect upon yields: otherwise the loss was more or less proportionate to the cane's growth stage when the weed crop started.

At two centres no depression in cane yields at 15 and 22 months was produced when the final weed-control operation—ordinarily considered essential—was omitted, though in one case there had been a very heavy weed crop at three months. In both cases the initial early crop of weeds had been brought under control. At another centre the values of thorough weeding were claimed to be demonstrated: the yields were reduced if a heavy weed growth was allowed to persist while the cane was between 1½ and 4 months old. At another centre where partial weed control in third ratoon cane had seemed inadequate the final result was that less cane was harvested, but of better quality, and hence the same amount of sugar was obtained as from plots on which weed control costing three times as much had been practised. In view of these results further work on the weed problem appears necessary. *(Trop. Agriculture, Trin. February 1943)*

Rotation Experiments with Cotton in the Sudan Gezira. by F. Crowther and W. G. Cochran, *J. Agric. Sci. Vol. 32, part 4, October 1942.* Frequent fallows are the first necessity in any rotation for cotton in the Sudan Gezira. Cotton should not be sown more often than once in three years, and even that may be too frequent for maximum yields. Between cotton crops at least a year's fallow is essential and the longer the fallow the greater the benefit. Thus experimental results support fully the soundness of present rotation throughout the Gezira scheme. Up till 1932—33 the rotation was three yearly with at least one full year's fallow per cycle. Then the rotation was changed to four yearly with two or three years' fallow per cycle.

Inclusion of dura[1] in the rotation invariably reduces cotton yields. Least harm is done when dura immediately follows cotton, with at least one fallow year before cotton recurs. Lubia[2] was in no case markedly superior to fallow but may prove slightly more beneficial than fallow when included in a short

1. Sorghum, 2. *Dolichos lablab.*

rotation following cotton or dura. On the other hand, if grown after fallow, lubia decreases the cotton yields.

In view of the large increases regularly obtained from nitrogenous fertilizers the benefit of lubia is surprisingly small and that of fallow surprisingly great.

By contrast, fallowing on irrigated land in Egypt is rarely justified for a spell longer than two or three months, the period necessary for cultivation. The high value of the land there together with the expenses of canal digging and maintenance render fallowing uneconomical. Fortunately in the Gezira land is plentiful and cheap. If in the future its value rises and cropping has to be more intensive, lubia will replace much of the fallow; meanwhile fallowing is a simple way of controlling weed growth and allowing recovery of the land without expenses of cultivation and supervision. *(Author's abstract)*

Relation of soil organic matter to the production of flue-cured tobacco by H. A. Horton *Sci. Agric. Vol. 22. No. 9, May 1942.* Results obtained from field plot experiments with flue-cured tobacco have shown that there is a general tendency toward higher yields of marketable leaf from plots containing larger amounts of soil organic matter. Where tobacco was grown every year the highest yields and the highest total organic matter were obtained where manure was applied and rye cover crops were grown in the intervals between seasons. The 2-year rotations in which tobacco was alternated with rye gave greater returns per acre than where tobacco was grown every year. The 3-year rotation in which tobacco followed two crops of rye provided much larger yields and returns per acre, and the soil organic matter was considerably higher than where tobacco was grown every year. In the 2-year rotations the application of manure caused significant increase in the content of soil organic matter but it did result in considerably increased yields of tobacco. At the same time the level of the organic matter was maintained under the increased production.

While the soil organic matter may not have been significantly increased by applying manure or by returning the rye crops produced in a 2-year rotation, the production of leaf was enhanced by these practices. In this way the value of the crop was definitely related to the amount of organic material which was added to the soil. *(Author's abstract)*

Gleanings

Economic value of plants The common Stinging Nettle (*Urtica dioica*) found in Great Britain was very much used during the last war both by Great Britain and Germany and is also being used in the present war. The bast fibres are very strong and are composed of a very pure form of cellulose. They are used in the manufacture of textiles and also in paper making. Use can be made of the chlorophyll, while the leaves are rich in feeding value and can be fed to cattle.

Here in Rhodesia our two main fibre crops from an economic point of view are sisal, which is grown chiefly in the Sabi Valley, and sunnhemp, which can be grown practically all over Rhodesia. Up to the present the drawback about sunnhemp has been the difficulty in extracting the fibre, but this has now been overcome by the invention of a new machine made in Rhodesia, and it is hoped that in the near future sunnhemp will form a profitable industry in the colony.

Another plant of great economic importance at present is stramonium (*Datura stramonium* and *D. tatula*). A full description of these plants was given in an article in the last issue of this Journal and in the present issue a note will be found on the marketing of stramonium. This plant contains the alkaloid—Atropine, which is used as a nerve stimulant and also for the relief of asthma.

Supplies are very short in Britain, and South Africa is sending large quantities overseas. Rhodesia is also playing her part in the collection of this important plant, and with the help promised by the various Women's Institutes it is hoped that appreciable quantities will be collected in the Colony for shipment overseas.

The yellow flowered poisonous shrub *Thevetia neriifolia* is familiar to most of us, and is often found as an ornamental shrub in gardens. It has been found that the kernels of this shrub contain a powerful insecticide. The kernels are ground and soaked in water for about 24 hours, filtered and a little soft soap added to the filterate. The resulting solution was found to be very effective against various insects such as aphids. A concentration of ¼ to ½ oz. of kernel per gallon of water was found to be satisfactory.

Finally, as we are aware, citrus fruits are scarce at home and a substitute for these has been found in parsley. It has been proved that parsley is very rich in Vitamin C—the Vitamin which prevents scurvy, and that parsley can take the place of citrus fruits. A socalled 'lemonade' can be made from parsley. (*Rhod. Agric. J. November—December 1942.*)

Vegetable oils as lubricants Owing to the growing difficulty of obtaining mineral oils from the U. S. of America the Transport Advisory Council has recently given information regarding the development of suitable lubricants composed of vegetable oils to replace mineral oils. The present annual consumption of vegetable oils used as lubricants is stated to be as much as 8,000 tons of castor oil, 1,500 tons of blown rape oil by the Railways, and 6,000 tons in sugar and ginning factories, and oil, rice and other mills. It is estimated that if vegetable oils were used for all applications for which they are suitable in place of mineral oils, the annual consumption would be approximately 46,000 tons.

A number of tests have been carried out during the past two years using lubricants which consist of 100 per cent vegetable oil as well as a number of blends of vegetable oil and mineral oil. Well-refined castor oil has been proved to be as good a lubricant as any for locomotives, the bearings of steam engines and for all heavy gears. Blends of mineral oil and blown rape oil are being used as axle lubricants for railway carriages and wagons as well as for compounded marine engine oils. Blends of mineral and groundnut oil are useful for the lubrication of compressors, gas engines and looms. Coconut oil is also used for looms. During the year 1941 arrangements were made by which 800 tons of castor and blown rape oils were substituted for mineral axle oils in the Indian Railways alone. Actually this absorbed practically all the available production of suitable castor oil. Trial runs of over 2,500 miles of motor cars with blends of castor oil with either groundnut or rape oil for lubricants have shown satisfactory results.

It is reported that the petroleum companies are now considering the possibility of marketing mixed blends of vegetable and mineral oils for the production of which their requirements are likely to be from 12,000 to 15,000 tons of castor and rape oils per annum. (*Planters' Chroni. April 24, 1943*).

Two hundred cabbages a minute The increase in cabbage planting has made farmers more familiar with a machine which has been on the market for some time, known as the Robot transplanter. Four operators are seated around a tray of cabbage plants, which are picked up by the operators and placed into rubber clips conveyed by means of a belt around the top of the machine, and carried down and deposited vertically in a furrow made by a forward shoe. The furrow is closed by means of two wheels set at angles which press the sides of the furrow. This machine, which sets out 200 plants a minute can, by altering the clips be adapted for sowing potato seed, and has recently been fitted with a water tank, so that plants can be planted in all sorts of weather during the proper season, (*Rhod. Agric. J. November—December 1942*).

Argentine storing corn under-ground The Argentine Ministry of Agriculture has announced the successful completion of an experiment to store corn in underground silos. A year ago 16 such silos were constructed in Cordoba, and the shelled corn stored in them was found to be in excellent condition when inspected recently. This type of storage is regarded as desirable because it would release wire and other essential materials ordinarily used in the building of maize stacks. (*Agric. Amer. September 1942*)

Motor fuel from sugarcane Experiments conducted at Louisiana State University by Dr. J. W. Jean have led to production from black strap molasses of a motor fuel called Jeanite. While not competitive in price with gasoline, the product is believed to have potential value for the several American republics which have no petroleum but do have extensive sugarcane.

Most other experiments in the use of grains and similar products for motor fuels have involved the production of alcohol for blending with gasoline. The new process avoids the objections of this procedure by producing entirely from molasses a fuel which is practically identical with gasoline in fuel value and octane rating. (*Agric. Amer. March 1942*)

Hints for Bee-keepers

For July, 1943

Unfavourable pasturage and weather conditions continue during this month also. A number of crops and trees such as maize, gingelly, *cumbu*, *babool*, *Peltophorum*, *Poinciana regia*, tamarind and drumstick are in flower, but the characteristic drizzly weather and the strong winds make it difficult for the bees to go out for foraging. Brood rearing is very poor and there is a steady reduction in the hive population. The information given during the previous month regarding the care of bee colonies applies to this month also. Special care has to be taken to ward off the bee enemies which are particularly active during these lean months.

Apart from the wax-moth, the bees have to contend with a few other enemies. The more important of these are (1) the black ant, (2) the yellow banded wasp and (3) the bee-hunter wasp. The occurrence and the habits of the black ant are too well-known all over South India to deserve any special mention here. Numbers of these ants sometime invade bee-hives and devour the food materials, brood and very often the bees also. The pest can be easily controlled by providing the hives with ant pans. Their underground colonies can be destroyed by dropping a few granules of calcium cyanide (a deadly poison) into the holes and closing them immediately. Dilute tar or kerosene also may be used. The yellow banded wasp can be often seen hovering about the entrance of bee-hives and carrying away stray bees. They can be handnetted and killed. These wasps, like bees, live in colonies in hollow spaces inside trees, walls, etc. Their colonies can be "gassed" with calcium cyanide after nightfall and the exit openings closed with clay. They can also be smoked or burned during nights.

A small bee-hunter wasp is occasionally found to cause appreciable damage to bee-colonies in certain localities. They are dark in colour with yellowish transverse bands, thick set and very active in their habits. They nest in underground tunnels in shady corners and sandy banks of fields. Relief can be obtained by digging out their nests or by hand-netting the adults. Besides these there are a few minor enemies which often infest bee colonies. The Death's head moth sometimes enters the hives and drinks away the honey stored in the cells,

but they are invariably killed by bees before they get out. Another minor bee enemy is the lesser wax moth. The caterpillars generally feed on the debris accumulated on the floor board, but they sometimes infest the stored combs. The hive and its parts should be kept clean and the caterpillars may be eliminated from the infested combs as in the case of the wax moth larvae. A few other insects like dragon flies, the wax beetle and leaf cutter wasps, and animals like lizards, frogs and toads and birds like the Drongo and the bee catcher, cause some minor damage but the loss is not serious enough to warrant any control measure. *M. C. Cherian and S. Ramachandran*

Crop & Trade Reports

Cotton raw, in the Madras Presidency The receipts of loose cotton at presses and spinning mills in the Madras Presidency from 1st February 1943 to 4th June 1943 amounted to 184,616 bales of 400 lb. lint as against an estimate of 430,400 bales of the total crop of 1942-43. The receipts in the corresponding period of the previous year were 229,070 bales. 245,308 bales mainly of pressed cotton were received at spinning mills and 639 bales were exported by sea while 99,024 bales were imported by sea mainly from Karachi and Bombay. *Director of Agriculture, Madras.*

Moffussil News and Notes

Agricultural Exhibitions—Salem district An agricultural exhibition was put up during the last week of April 1943 at Krishnagiri in connection with the Krishnagiri Taluk Tournaments. The exhibition was opened by the Sub Collector, Hosur. Posters on Grow More Food, better preservation of manure and other agricultural improvements were put up with suitable exhibits. Improved implements were arranged in the stall in the form "V". Specimens of E. C. 593 and local *ragi* plants and ear-heads of E. C. 593, A. S. 1543 *chclam* and Adt. 16 paddy were included in the exhibits and they were much appreciated by visitors. Specimens of locally raised vegetables, chini orange, pomelo, and mango fruits were also exhibited. Preparation of *ragi* malt and extraction of honey from bee-hives were the other items. A certificate of merit by the District Collector of Salem was awarded to the Agricultural Section.

An agricultural exhibition was put up in the premises of the Board High School, Tiruchengode, during the first week of May 1943 in connection with the tournaments conducted by the Rural Uplift Association. The exhibition was opened by the District Collector, Salem. Specimens of improved strains of paddy, millets, cotton and the local vegetables and fruits were put up in the stall. Explanatory notes and posters were put up by the side of each exhibit and these were instructive to visitors. Live plants of *bodantum*, *Cassia siamia* and *Glyricidia maculata* were exhibited with suitable posters explaining the prospects of their cultivation in the taluk. Posters on Grow More Food Crops and Vegetables was a special feature. A bee-hive with all bee-keeping appliances was put up and the economic aspect of bee-keeping as a cottage industry was explained to the visitors. The District Collector, Salem distributed 12 prizes (9 ploughs, by the Co-operative Societies, one P. S. G. 6. plough, one *mamooty* and 45 lb. of groundnut cake by the Department) and 13 certificates of merits to *ryots* of the Tiruchengode Taluk who cultivated maximum area under food crops.

D. A. O. Salem.

Estate News and Notes

The College The College reopened after the summer recess on the 15th June for the II and III year classes. Selection of students for admission to the I year class has been made by the Principal.

Imperial Sugarcane Station Rao Bahadur B. Viswanath, C. I. E., Director, Imperial Agricultural Research Institute, New Delhi, held a Durbar on the 14th June at the Imperial Sugarcane Station, to present the isignia and Sanad of Rao Sahib to Mr. R. Thomas, Assistant Sugarcane Expert. After the Durbar, Rao Bahadur Viswanath unveild a portrait of Rao Bahadur Sir T. S. Venkatraman, Kt. C. I. E., D. Sc. The function was held at the Laboratory of the Station. The guests who were invited for the function were entertained to Tea. The portrait was an oil painting by Mr. V. G. Emmanuel, and was much appreciated.

Visitors Rao Bahadur B. Viswanath and Sri K. Coomaraswami Chetty. Assistant, Marketing Officer, New Delhi, camped at the Estate during the month.

RETIREMENT

Mr. R. W. LITTLEWOOD, N. D. A., I. A. S.

Mr. R. W. Littlewood was born in June 1888 at Wakefield, Yorkshire. He was educated at Queen Elizabeth Grammar School, Wakefield, and Leeds and Reading Universities. He underwent training in farming and cattle breeding in Lord Middleton's Home Farm, Bridsall, Malton. He was in service in England in the Inland Revenue Department. He resigned his post to accept a Commission in the R. F. A. during the last Great War. He saw active service in France and was invalidated at the end of 1917. In 1918 he was appointed Horse Officer for the Somerset War Agricultural Committee and later in 1919 was appointed as an Agricultural Costings Officer, under the Ministry of Food.

He was appointed as a member of the Indian Agricultural Service in October 1920 and joined the Madras Agricultural Department as Deputy Director of Agriculture-Livestock, in January 1921. He had his headquarters at Coimbatore till 1924. When the Army Remount Depot at Hosur was handed over to the Madras Agricultural Department, it was converted into a Livestock Research Station and the office of the Deputy Director also was transferred to Hosur. He was responsible for the organisation and development of this excellent cattle farm which is one of the biggest and best cattle breeding stations in India. The Ongole Cattle Breeding Station at Chintaladevi and the Buffalo Breeding Station at Guntur were also under his control, until the stations were absolished in 1932. For a short period in 1936 he was appointed as Principal of the Agricultural College, Coimbatore. When the Hosur cattle farm was transferred to the Veterinary Department in 1938, the services of Mr. Littlewood also were transferred to that Department as Livestock Development Officer.

He was a member of the old Board of Agriculture in India and represented Madras at the first Imperial Agricultural Research Conference in London in 1927. He was a member of the Dairying and Cattle Breeding Committee of the Imperial Council of Agricultural Research. He has published various papers on cattle breeding and allied subjects, and his book on *Livestock of Southern India* is an exhaustive and practical handbook.

During the period he was Principal of the Agricultural College, Coimbatore, he was ex-officio President of the Madras Agricultural Students' Union.

He went on leave on 18th March 1943 preparatory to retirement and lays down his office on superannuation on 19th June 1943.

We wish Mr. Littlewood a long and happy life in retirement.

Departmental Notifications

Gazetted Service—Appointments

Sri V. K. Subrahmanya Mudaliar, Asst. Cotton Specialist, Adoni, to act as D. A. O. Kurnool.

Sri A. Chidambaram Pillai, A. D. Conjeevaram to act as D. A. O. South Arcot.

Sri M. P. Sankaran Nambiar, A. D. Dharapuram to act as Special D. A. O. Vizagapatam for Vegetables.

Sri V. Achutharamayya, F. M. Samalkota to act as D. A. O. Ellore.

Sri G. Sakharama Rao, A. D. Karkal to act as D. A O. Ramnad.

Sri V. Satagopa Ayyangar, A. D. Mayavaram to act as D. A. O. Tinnevelly.

Sri S. Venkatarama Ayyar, F. M. Palur to act as D. A. O. Nellore.

Sri P. A. Venkateswara Ayyar, Teaching Asst. in Agriculture, Coimbatore to act as D. A. O. Guntur.

Sri C. Jaganatha Rao, Asst. in Cotton, D. F. S. Hagari, is appointed to officiate as Asst. Cotton Specialist, Adoni.

Transfers and Postings

Sri C. Ramaswami Nayudu, on return from leave, is posted to act as Dy. D. A. Coimbatore vice Sri B. Ramayya on leave.

Sri U. Vittal Rao, D. A. O. Mangalore to be D. A. O. Coconada.

Sri S. Sitharama Pathrudu, D. A. O. Coconada to be D. A. O. Vizagapatam.

Sri M. V. Raghava Rao Nayudu, D. A. O. Vizagapatam to be Special D. A. O. for Vegetables, Vizagapatam.

Leave

Sri A. Gopalakrishniah Nayudu, D. A. O. Nellore, l. a. p. for 1 month and 5 days from the date of relief.

Sri K. Avidainayakam Pillai, D. A. O. (on leave) extension of leave on half average pay for 6 months on m. c. from 2—5—43.

Sri T. G. Muthuswami Ayyar, D. A. O. Tinnevelly, l. a. p. for 2 months from 1—5—43.

Janab A. Gulam Ahmed Sahib Bahadur, D. A. O. Kurnool, l. a. p. for 2 months from the date of relief.

Sri T. S. Ramasubramania Ayyar, Asst. Agricultural Chemist, Coimbatore extension of leave on half average pay for 1 month from 13—6—43.

Subordinate Service—Appointments

The following officiating appointments of Upper Subordinates, III Grade, are ordered with effect from 1st July 1943—

P. Narayanan, A. D. Hosur; L. Venkataratnam, A. D. Coimbatore; Ch. Soundararajan, Asst. Mycology Section, Coimbatore; K. N. Doraiswami, A. D. Ramnad; B. Srinivasa Rao, F. M. Coconut Station; A. Subramanyam, Asst. Millets Section, Coimbatore; N. Srinivasulu, A. D. Tadepalligudem; K. Narayana Rao, A. D. Hadagalli; A. Sankaran, F. M. Anakapalle; M. Gopalakrishna Kamath, A. D. Kollegal; P. V. Suryaprakasa Rao, A. D. Badvel; K. Bhaskaran, F. M. Samalkotta; K. V. Srinivasan, Asst. Mycology Section, Coimbatore; U. Sanyasi Rao, A. D. Podeli (Nellore Dt.); B. Vasudeva Rao, A. D. Dhone; V. Venkatasubrahmanian, Asst. Entomology Section, Coimbatore; B. Narasimham, A. D. Pattikonda; E. Jagannatha Rao, A. D. Madakasira; K. S. Suryanarayana, Asst. Chemistry Section, Coimbatore; D. Narayana Rao, Asst. in Cotton, Nandyal; Y. Chintamani, A. D. Parvatipuram; H. Narayana Kamath, A. D. Malabar district.

Transfers and Postings

Name of officers	From	To
Sri S. Muthuswami	Asst. in Fruit, F. R. S. Koduru	A. D. L. R. S. Hosur for the cultivation of vegetables.
,, A. Shanmugasundaram	A. D. Wheat Rust Control Scheme, Coonoor	Asst. in Paddy, A. R. S. Pattambi.
,, S. Mahadeva Ayyar	A. D. Kodaikanal	A. D. Koilpatti.
,, G. Doraiswami	A. D. Koilpatti	F. M. A. R. S. Koilpatti.
,, P. Somayajalu	A. D. Salur	A. D. Ramachandrapur.

Leave

Name of officers	Period of leave
Sri M. Suryanarayana, Asst. in Chemistry, Coimbatore	Extension of l. a. p. on m. c. for 4 months from 28—5—43.
Janab Muhammad Fasiuddin Sahib, Asst. in Cotton, Adoni	Extension of leave on half average pay on m. c. for 1 month and 15 days from 21—5—43.
Sri K. Cherian Jacob, Asst. in Botany, Coimbatore	L. a. p. on m. c. for 4 months from 24—5—43.
,, M. P. Narasimha Rao, Cotton Asst. Nandyal	L. a. p. on m. c. for 2 months from 17—5—43.
,, V. M. Ramunni Kidavu, A. D. Perintalmanna	L. a. p. on m. c. for 3 months from 6—6—43.
,, M. K. Swaminathan, A. D. Orthanad	L. a. p. for 1 month from 16—6—43.
,, K. B. Viswanathan, Asst. A. R. S. Marutur	L. a. p. for 5 weeks from the date of relief.
,, T. V. Srinivasacharlu, A. D. Sriperumbudur	Extension of l. a. p. on m. c. for 1 month from 20—6—43.
,, C. Venkatachalam, A. D. Tadepalligudem	Earned leave for 90 days on m. c. from 29—4—43.
,, M. P. Gowrisankara Ayyar, A. D. Devakottai	Extension of l. a. p. for 1 month from 21—6—43.
,, M. L. Narayana Reddi, A. D. Anakapalli	L. a. p. on m. c. for 1 month from 5—6—43.

An Appeal

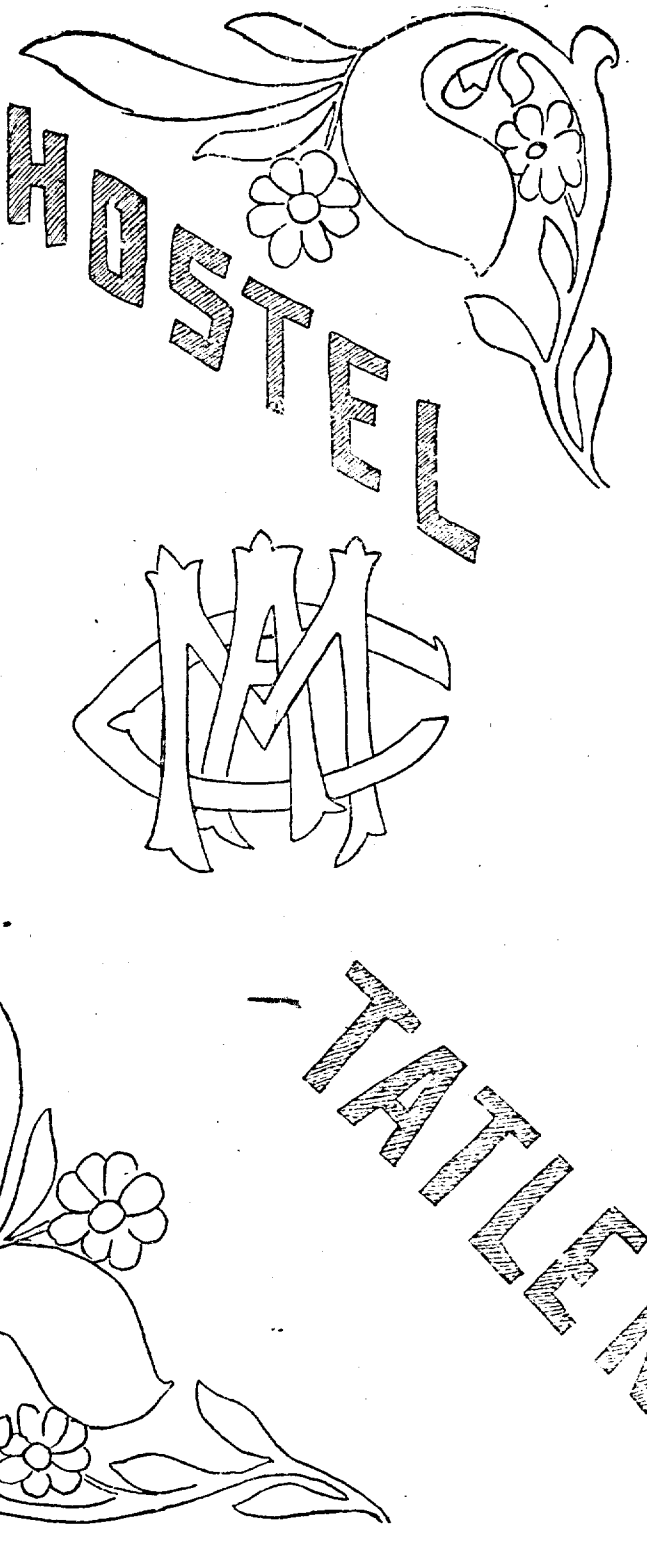
The Editorial Board of the Madras Agricultural Journal will be glad to receive contributions from readers on subjects of agricultural and horticultural interest with special reference to the different aspects of the Grow More Food Campaign. It is requested that manuscripts are sent typed and do not exceed six pages.

S. V. Doraiswami
Secretary,
Madras Agricultural Students' Union.

SU. 24.

The "Priest": New 8th Army Weapon which outgunned Rommel.

Picture shows: The business end of a "Priest" 105 mm. self-propelling gun.



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» *II year class*	P A Srinivasan
» *I year class*	P. T. Bhaskara Panicker

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Local Correspondents	R. Venkatraman and O. V. Ommerkutty
Lighter Vein	E. R. C Vincent and Narasimhulu
Photography	T. Venkataswamy and K Sadagopan
Mess Correspondents	D Ranga Rao and A S. Krishnan
Our Cinema Reviewer	N. R. Adyantayya

The Tatler's Diary 1942—43

June 15. The College re-opens.

» 16. As usual some students begin serious studies.

» 17. Mr. Kamath arrives with a large consignment of Mangalore *beedies* for distribution among the *beedi* patronisers.

» 21. Hostellers busy due to the impending elections.

» 23. Mr. Chengappa arrives with a hockey stick for his interview.

July 2. Mr. Kamath goes to the first year blocks, impersonating the Warden but returns after receiving a 'grade'.

» 10. Mr. I. L. Narasimharao lodges a protest with the Warden saying that a sufficient number of 'extras' are not being supplied to him.

» 24. Mr. Francis Gurubatham attends the picture-house for the first time in his life.

August 11. Mr. Ramanatham takes his monthly bath.

» 12. Mr. Srinivasan resigns his Club secretaryship.

» 14. Mr. Venkatraman is elected in his place.

» 15. Mr. Venkatraman goes to the town for buying a suit and shoes.

» 26. Maiden attempt by Messers Ramakrishna Sastry and Vincent at shaving.

Sep. 1. Ramakrishna Sastry elected as the mess-representative for the new mess.

» 2 Mr. Narasimhan attempts at spin-tennis.

» 17. Mr. Nargunam buys a second-hand pith hat.

» » Most of the students leave for their homes as the examinations are over.

» 19. Mr. Ammiraju replaces his *Kasi chembu* with a tin-can.

October 3. The students return after the holidays.

» 5. The examination marks begin to be announced to the inconvenience of some.

» 10. Mr. Cripps arrives after having an extra spell of holidays.

Oct. 12. Messers Shanmugam and Govindarajulu enter the picture hall to see 'Doctor' but are surprised to see Sakuntala on the screen. They swallow the pill and return to the hostel disappointed.

» 22. The third year students leave on a week-end tour to Palghat.

» 23. Some casualities of the above trip take to bed.

» 24. The Grow More Food campaign is inaugurated in the hostel by the Warden.

» 30. The third year students leave for Palayakottai with five students less.

By Our Diarist

STOP PRESS

November 7th—Mr. V. L. N. Sastry beats the previous *idli* record by eating 26 *idlies* at a stretch. Our congratulations.

The Agricultural Graduate

A sound training in the basic sciences not only makes an agricultural graduate more proficient in his chosen field of applied science, but it also makes him a more versatile and therefore a more useful citizen in war as well as in peace.
L. E. Kirk, J. Amer. Soc. Agron. Dec. 1941.

Five Annas

By R. S. KOLLEGAL

FOR five years myself and my wife were thinking of electrifying our house. As usual we never came to any definite conclusions. One day, I finished my meal and was about to start for the office, when my wife came to me with a long list of things like chimneys, kerosene, etc., to be bought that evening. She began—

"Considering all these things, it is better we electrify our house". I was surprised to see my wife come to such a definite conclusion in so short a time as five years.

"Yes! that's what I was also saying from the beginning. In these days almost all the houses are electrified and further if we electrify our house it would save you a lot of trouble. You would not have to clean the chimneys and lights nor pour oil on the ground thinking all the while that you are pouring it in the light."

"Oosh! you speak as though you are going to electrify the house to save me some trouble."

"Further, you finish off at least six chimneys in a month. That will be a saving hereafter." I continued.

"As if I wantonly do it. Sometimes they slip off and break. If you buy good, durable ones there would be no such difficulty. You always go in for third-rate stuff and you want them to last till your grand-son begets a son."

"At least so far as I am concerned, my brain refuses to work when I begin to write articles under oil lamps."

"Why blame the oil lamps for that when the mistake lies with your brains?"

All the while I thought she was trying to take the offensive, as usual, but when I learnt that she had actually taken it, I thought it advisable to change the topic in the interests of both. So I began,

"So, I will place an order with the local contractor to-day. In the evening be ready to go to the theatre."

"But we must know what the initial costs are likely to be."

"Why do you want that? You ask for every detail as though you are paying from your privy purse."

"Not that. What I meant was the monthly bill. Whether it would be economical or not."

"It is sure to be economical, so long as you do not break chimneys and waste kerosene oil."

At last, our house was electrified. Whenever she finds time she will be found standing in front of the meter. Fortunately the meter-board was inside the house and not on the veranda as in so many houses. In a week the meter showed '4'. I was just dressing myself up for the office when my wife came running to me and said.

"What is this? In a week the charge has come to Rs. 4. Hereafter we must be very economical. We must sleep before 9 o'clock and on no account should the light burn after that."

I nodded my head in approval.

Writing articles was my pastime. One night I was seriously thinking of writing a new and funny article—"Oh! these hen-pecks". I was thinking as to how the article should be—an essay or a short story or a narrative or in the form of a conversation between two henpecks—when came the thunder-bolt.

"Why are you sleeping with lights on?"

"Choo! don't disturb me. I am seriously searching for an apt word".

"Serious thinking does not require bright lights .. .." and she put out the lights.

I went and switched on the lights. But she again switched them off. This process of switching on and off happened for 5 or 6 times. I was not able to make out whether it was the beginning of a new life. I was reminded of the early married days.....there my writing an article came to an abrupt end.

A month later the meter showed a reading of 12, only 12, my wife was shocked when she saw this and came to the quick conclusion, arrived at, all by herself, that the bill is Rs. 12. She thought I was duped and advised me to enquire in the municipal office. I was enjoying all this, though I felt for her innocence.

The next day the monthly bill was received, and it was only for Rs. 3 for 12 units. I showed it to her thinking that she would compliment me for my performance.

"So, only three rupees. How much we have saved this month! If we are careful we can save more" said I.

"Three rupees! What were the lighting expenses last month? Five bottles of kerosine at 2½ as. per bottle, six chimneys, three for the hurricane at the rate of 5 as. each, one at 2½ as. and another two for the bed-room light at 1½ as. each, three wicks at 3 ps. each. What does the total come to?"

Poor soul!, she did not know that I was not a Ramanujam, but only a graduate in natural science, who passed S. S. L. C. by the generosity of the Moderation Board getting a bare minimum of 25%

in Elementary Mathematics. So, I said at random "2—11—0" and that we are paying only 5 as. extra for the extra brightness we got for the house.

"What!, you say only 5 as.?—in these days of economic depression 5 as. means 2 seers of good salt enough for a month. In a year the excess would come to nearly Rs. 4. You are very liberal in all these things but when it comes to the question of buying a good *saree* for me you say funds do not permit".

The reader may think that I belong to that group of fortunate people whom the world mercilessly and arrogantly call "hen-pecked". Only when you are hen-pecked—though others would think that you are in trouble with your wife—you would feel that you are in heavens.

That night I heard my wife murmuring in her sleep—"5 as. means 5 as."

A Doubt

Although he was very keen on his study, the new student to the dairy was finding things very strange there.

After having an incubator explained to him by the Manager, he was asked if he understood how it worked. With a puzzled look in his eyes, he replied:

"Yes; but I can't see where the hen sits."

The Eleventh Commandment

"Thou shall inherit the holy earth as a faithful steward conserving its resources and productivity from generation to generation. Thou shalt safeguard thy fields from soil erosion, the living waters from drying up, thy forest from desolation and protect thy hills from over-grazing by thy herds so that thy descendants may have abundance for ever. If any shall fail in this stewardship of the land, thy fruitful fields shall become sterile stony ground and wasting gullies, and thy descendants shall decrease and live in poverty or be destroyed from off the face of the earth." *W. C. Lowdermilk, Poona Agric. Coll. Mag. Feb. '43.*

Cambodia visits Karunganni

(An imaginary conversation among cottons)

By L. NEELAKANTAN

Prologue (While on a tour of sight-seeing in the black cotton soil of the Tirunelveli district, two cotton strains, Co. 2 and Co. 3 meet their confreres—*Karunganni*, *Uppam* and *Pulichai* and engage them in a pleasant conversation.)

Karungannis (all) Hallo! big brother, whither and on what errand ?

Co. 2 Just on a joy visit to this side of the country to renew old aquaintances. Let me introduce to you my cousin hailing from distant Uganda and married and settled in our country.

First Karunganni I believe he is Co. 3. We have heard much about him.

Second Karunganni (slyly) Ever since he came to these parts, I guess, our old brother has been losing popularity. I can tell it from his wan face. What brother, don't the good *ryots* need you any more?

Co. 2 Pray, gently, there is no need to be presumptuous. I am alright but what about yourself. Don't you know that since K. 1 rose amongst you, you are being eclipsed yourself. Funny that you should miss the beam in your eye.

S. K. We know that. He is our own dear cousin. Only he had the fortune of basking under the genial sunshine of Government patronage at the Koilpatti Agricultural Farm. So a special importance attaches to his name.

F. K. But have we not ousted out these *Uppam* chaps ? Has our big brother any such achievement to his credit ? He dare not measure his prowess with Co. 3.

Co. 2 (laughing) Oh ! What folly to fawn on K. 1 on the slender plea of kinship. In a few years he will occupy every inch of land that you are now on. This is certain.

Co. 3 Suppose my cousin and myself go all out on a campaign of occupation in these places. I wonder if you can stand up to us.

(All the *Karungannis* burst into a peal of laughter and Co. 3 feels confused and awkward).

Co. 2 (smiling) Pardon, brothers he is yet new to the conditions obtaining here (turning to Co. 3) Funny, cousin that you talk in this manner. Don't you know we can't get on without plenty of water baled out from wells. In this dry black clayey soil where our friends here revel and make merry with what little of water that a miserly monsoon provides, there is none in our race who can stand a competition with them.

Co. 3 (apologetically) Sorry, gentlemen, but I don't mean serious. Er, cousin where can we see these *Uppam* people ?

F. K. There, on a piece of elevated light soil you can see the *Uppams*. We have relegated them to such odd places.

Co. 2 Thank you, friends, good-bye.

Co. 3 Ah ! these are the *Uppams*, I suppose. What grace and what charm. Gorgeous as the parrots and quite hale and healthy ; how I pity their fate.

Co. 2 It is all appearance, sir, and nothing more. They do not have such quality stuff as the *Karungannis*, neither are they so industrious. They are weak and vacillating.

Uppams (all) Welcome brothers, how do the *Karungannis* fare. We saw you talking to them. They are a strong race and hate us.

Co. 2 Happy to meet you brothers, but why worry about the *Karungannis*. They dare not wipe you out from the district.

First Uppam No, they will do it ; they can and are still stirring.

Co. 2 Can't you get on together in a spirit of co-operation.

F. U. No use brother. On our part we have been accommodating to the best possible extent knowing our limitations. Fortunately good mother earth has given us pieces of land which are not suitable to the *Karungannis*. While we are thus protected by nature from invasion, we are exposed to another temptation for which I hold our common phylogeny is responsible. Members of our race take a fancy for members of the *Karunganni* race and illegitimate unions take place resulting in the birth of a race of cross breds. While these images of sin may not be a serious factor among the *Karungannis*, they are a problem to us. Limited as our race is in population, these happenings tend to check further our efforts in maintaining our integrity and character unsullied from generation to generation. Alas ! most of the good farmers consider us as inferior to the *Karunganni*.

Co. 2 Hang the *Karungannis !* haughty chaps. You too had your halcyon days and are still having a fine time in other parts of the world. You will see the downfall of these *Karungannis* ere long.

F. U. May be ! they too are not quite happy. Quite recently another race is worrying them. This is the *Pulichai* race ; it came somewhere from the north and bids fair to settle down comfortably in these places. Yonder, there on the fringe of our occupation, and quarrelling with some *Karungannis* in the out post of their territory, you see one such fellow ; tall, scraggy with sharp features and a look of supreme contempt in his face ; that is the *Pulichai* fellow ; a cunning rogue. He is a nightmare to all of us in these parts.

(The *Pulichai*, not very far off overhears and addresses Co. 2.)

Pulichai Brother Co. 2, what timid creatures are these *Uppam* girls. I pity them. But these *Karunganni* fellows, well, I hear stories of a new champion among them, K. 1 they say. How is he like, brother. That vain prig is perhaps not aware of my valour. He may be the best of *Karungannis* but he can never trespass the border of his species. Let him not cross me. Very shortly I will be marching a whole army of my people to take possession of these lands. There is not space for us in our home, and we find this tract very congenial to colonise.

Co. 2 (smiling) Well spoken, burly rogue. You may be strong, sinewy, coarse, tardy and capable of much endurance. But these alone are not enough to keep your race away from the dangers of extinction. Where are the mighty dinosaurs and the giant mammals that ruled the land, sea and water in the ancient past. Brother, *Pulichai*, I am not discouraging you, but you make light of the qualities of K. 1 and there you commit a blunder. In days of yore the demon Kamsa spoke tauntingly of the Lord in His boy incarnation just as you are doing now and you know how the story ended. I am not quite sanguine about your future. God be with you, good-bye!

(A field populated with K. 1.)

K. 1 (all together) Welcome brothers Co. 2 and Co 3. How do you do ?

Co. 2 Yes he has not been here before and he is very eager to have your aquaintance; but pray how did you know my cousin Co. 3.

First K. 1 As if it were a wonder! We have heard a good deal about him and the description is exact.

Co. 3 Thank you, I too had just now occasion to know all about you through my cousin Co. 2. All the *Kaungannis* speak highly about your qualities of head and heart.

Co. 2 Why not ? the good farmers and the benevolent Government themselves testify to his greatness. What better references need he have.

F. K. 1 Please, brothers save us from embarassment by these barefaced compliments. We are merely stirring hard to be of the best possible use to our benefactors. We pray God that He may help us in our efforts. Honestly we have no intention of competing with our cousins.

Co. 2 and Co. 3 God will help you, you will succeed, good-bye.

Co. 3 What modesty and what noble views. Though short and stubby these K. 1 are really people with substance. But why are they sad, some of them at least ; I noted distinctly.

Co. 2 I too noted. Poor chaps. Their constitution is not quite up to the mark. You know the wilt disease that is causing so much havoc in other parts. Well, some of these K. 1 happen to possess low resistance and they succumb to the attacks. But they are being looked after properly ; well, hurry up please. It is quite late. There an Agricultural Officer is expatiating on the qualities of K. 1 to a group of cotton growers. Let us hear him and then turn homeward.

Epilogue An Agricultural Demonstrator to a group of *ryots* somewhere in the Tirunelveli district.

"K. 1 is a pure and improved *Karunganni* strain of cotton born at the Agricultural Research Station, Koilpatti. There is a saving of a few rupees per acre by growing it in the place of *Karunganni* or *Uppam*. It yields 450 lb. of kapas to the acre whereas your local yields 300 to 400 lb. It has a high ginning percentage—33, whereas yours gins to 30's. A smaller area is enough to raise a required quantity of kapas for which a correspondingly greater area of your cotton will be necessary. You can utilise the extra space thus released for growing more food crops. So go in for K. 1 cotton".

A Specimen Application for Leave

Name of student: X. Y. Z.
Class: V.
Reason for absence, Tiffin not available.
Period of leave ; From 8 A. M. on 6—10—42 to 11 A. M. on 6—10—42.
Number of working days: ½ a day

X. Y. Z.
Date: 7—10—42. Signature of student.

Remarks of the Warden

Produce M. C.
(Sd)..... 8—10—42.
Not recommended.
(Sd.).....12—10—42. H. W.
Date - 12—10—42. Signature.

Orders of the Principal.

See the Principal.
(Sd)..... 13—10—42.
Not granted.
(Sd)..... 18—10—42. P.
Date: 18—10—42. Initials.

Communicated to the Warden: 20—10—42.
Communicated to the student: 25—10—42.
Returned to the office: 27—10—42.

(With due apologies).

My Hostel Experiences

By K. B. CHENGAPPA

(Herein we give you the experiences and feelings of one of the new students, from his own pen. We wish to tell the readers that the student concerned is not known to be a light eater. *Ed. Tat*)

OUR mess is the only non-vegetarian mess in the hostel. It is named so because most of the members in this mess are thorough non-vegetarians. But it ought to have been named as a semi-non-vegetarian mess as it is mostly vegetarian. Out of the 14 meals you take per week, you can expect only four times meat. When eggs and fish are considered to be vegetables and taken by many vegetarians, why not sheep be considered as inflorescence for its fleece? Because of this, I think so many who used to shudder at the sight of the N. V. Mess now join it in large numbers.

Early morning you have to get up and rush to the mess, if not, you may be late to the class. You must remove your slippers at the door. But if you happen to wear shoes or boots you have to remove them standing, running the risk of falling down as you may loose the balance while doing so. You find inside small planks raised hardly one inch above the ground and here also you must be careful lest you should loose your stability. The cooks with *dhoties* (which I am sure were washed before the beginning of this year) as black as tar will enter to serve. You will be supplied with 1 *dosai*, 2 *puries*, 2 *idlies*, or 2 slices of bread which may not be sufficient to reach even the oesophagus. The bread will not be with butter. I would propose in this case to have a dish of butter safely placed beyond our reach but in full view of all the members so that you point the piece of bread in the direction of the butter and satisfactorily eat it. You are supplied with coffee also which many of us suspect to have been prepared with quinine, being as bitter as Margosa.

Then you will go to the Central Farm, from which you will be taken to, most probably wet-lands. There you are expected to work, while it is quite impossible as there is no 'petrol' in the stomach to control the plough or the pair of bullocks. After sometime you will be asked to come out, but you will not be able to pull out your legs out of the mire. Anyhow you manage to come out as you want to return to the hostel. Then the Professor will give you some hints about the work you have done and how you could have done it better (if only you had stamina enough, to put forth.)

After this you will have to run to the hostel so that you can get water for your bath, as there are only two bath-rooms for 40 students.

I think that is why so many are becoming the members of the Anti-bathing Club. As there are eight bath-rooms for the Third Years who are 30 in number, you will be tempted to go there as there is more water. But those generous people will object to this and may even trap you inside the bath-room and declare in unmistakable terms that the bath-rooms and the flushouts are luxuries for the use of only the privileged Third Years. (Imagine the plight of the Third Years if 40 students raid the bath-rooms and latrines, constructed for the use of 30 students. *Ed. Tat*).

When you finish your bath, it will be about 11 A. M. and all, hungry like wolves, but, must wait for the arrival of the prey, for your attack will begin only at 11-30 when the mess-bell rings. For your mid-day meal you first get rice and ghee. You will be served next some curry 49% brinjal and 49% plantains which I think contains the most nutritive matter and vitamins as this is an Agricultural College. Some *sambar* comes next, which will contain some drum-sticks (which is supposed to improve the brain) suspended in it, or some tomatoes, once in a month, as these are the cheapest vegetables available in the orchards. After finishing your attack on this, you get *rasam*. This solution contains in it everything except pepper with which the *rasam* is supposed to be prepared. This, when poured out will be in floods in every direction and will threaten to go out of the leaf and so you must finish it as quickly as possible. After this solution, you are supplied with curd which is the only nutritive food in the mess. But I don't know why this has been also recently stopped. It may be due to the rationing of milk supplies, due to war.

At 2 o'clock you have to go to the class again. At the end of the first period you cannot remain there as you will be hungry again. You control this and come to the mess at 5 P. M. You will get some 'sweets', the contents of which no research scholar can analyse except the cooks who prepared it and a 'savoury' or a plantain and some 'mixture'.

After the night meals you come to your room and when the Warden finishes his rounds with his 'famous' petromax, you feel like eating again, but there is nothing except the books and the clothes in your room. So you will have to go to bed early so as to forget the hunger. Often water too will not be available in the jug as the venerable old gentleman who supplies drinking water might have been stranded on the way struggling with his bullock which is as old as himself. One good effect of our mess is that the agricultural graduates who become cultivators of their own lands may be prepared to withstand famines. So better join our mess as early as possible. Do not waste time. A single trial of our mess will lead you to become a member of our mess for ever.

Crowing

By NANDI

I happened to go through some letters written to students by their well-wishers in which I noted the following sentence. "Be friendly with your Professors and college authorities". Though the words were not the same in all the letters, yet all contained the same meaning and were more or less the allotropic modifications of the above sentence. What does this mean? Will it be that fatal word—that word 'crow-catching'? It is very difficult to find an answer to this question.

Here the scientists come to our rescue. Whenever the scientists are baffled by a certain phenomenon and whenever they find it very difficult to explain the why and how of it, they simply say that it is a law of nature. Like this 'crow-catching' may be said to be a law of nature. But there is no harm in defining it as follows:—

'Crow-catching' can be defined as that art or science, or both, by which the inferior sections of the humanity of this world try to win the affection and sympathy of the superior sections under different conditions of rank and position.

'Crow-catching' is in-born in everyone. Thomas Hughes said in *Tom Brown's School-days* that fighting of one kind or another is a law of nature. But I dare say that 'crow-catching' is a law of nature. When you are born in this world among the erring humanity you cannot avoid 'crow catching'. You have to do it in one form or other. But in some it is found only in a dormant form while in others it is well developed. Some are born 'crow-catchers', some achieve it and some have 'crow-catching' thrust upon them.

As I have said before it is very difficult to say whether it is an art or science. But it could not be a science because in our college where almost all sciences are taught, some necessary and some unnecessary, the authorities would have included this as a subject, if it is a science. Will it then be an art? In that case it would have been added as a subject in the III group in the Inter. Just as we have got Indian history, modern history and logic we will then have Indian history, modern history and 'crow-catching' or physics, chemistry and 'crow-catching' i. e., the III group will be a permutation and combination of physics, natural science, chemistry, mathematics, 'crow-catching', etc.

In these times when various experiments are being done to modify the system of education I would safely recommend the inclusion

'crow-catching' as an optional subject either in colleges or schools. It won't be out of place if a Diploma course is given in crow-catching so that the students will get the diploma D. C. C. (Diploma in 'Crow-Catching'.) Will they do it? I call upon expert 'crow-catchers' to give their calm, cool, and undivided attention to this problem. In these days of economic depression and unemployment it is a source of employment for expert 'crow-catchers', and they will be doing a great service to the 'crow-catching' humanity as well.

'Crow-catching' is a vast subject and it is beyond the scope of this article to explain it clearly. But it won't be out of place if I cited some of my experiences in the art of 'crowing'. While at school a teacher who was terribly wild and was rushing to thrash a boy was brought to a standstill, dumb struck when the boy murmured a few words. What were those magic words? The boy murmured, 'Sir, my father wanted me to ask you whether you will be kind enough to give me tuition in physics'. Certain conversations followed and some days later, it was a wonder to me when the teacher smiled even when the boy was unable to explain the Archimedes' Principle. For the teacher has become his tutor adding Rs. 25 monthly to his scanty income. What will you call this? Teacher 'crowing' boy or boy 'crowing' the teacher? Or both?

But in colleges you will rarely succeed in 'crowing' professors by promising to be a 'tution-boy' under him. Here you will have to adopt other methods.

When one wants to 'crow' a person, he must be very careful and must know when and how to 'crow-catch'. If you know this you have studied half the art. You must know the mood of the person whom you are going to 'crow catch', whether he has quarrelled with his wife, or whether he had a nice time with his wife, and so on and so forth.

Salutation is of first and foremost importance. How to begin the conversation? Here also you must use your intelligence. In some cases you can directly approach by saying "awfully bad weather, sir".

You may even talk of politics. But the important thing is you must never oppose his views. If he says that Napoleon was the King of England or Lord Ravana defeated Demon Krishna at the battle of Waterloo you must simply give an appreciative nod conveying, yes, even if you know well that he is in the wrong. This is the secret of success.

If you happen to see the son of a gentleman whom you wish to 'crow', you can consider yourself to be lucky and it is a red letter day for you. Easily approach him, nicely and scientifically, and load him with biscuits and peppermints and memorise him with your name

so that he can say to his father that you supplied him with those edibles. Be careful to wrap the edible in a secure way in a piece of paper. Otherwise the boy might eat it on his way and your whole attempt will be foiled.

After all, will inviting to dinner or garden party be a means to 'crow catch?' Yes, it is. But it is expensive, for you will have to pay for his dinner and the public may know why you asked the gentleman to dine with you.

Try to become, conspicuous in the eyes of the people whom you wish to 'crow-catch'. In an educational institution, when the lecturer asks whether you have any doubts, stand up at once and ask some doubts, whether you have got any doubts or not. Request him to explain the last year's portion once more or ask him any question, connected with the subject or not. What do you care? Your aim is to 'crow-catch' and the lecturer's aim is to teach and both will be satisfied. Ask him why he is having a turban, instead of a hat or *vice versa*. Ask him whether the flavour of Virginia tobacco will be the same in America, England, Germany, France, Australia and India. But of course you must be prepared for the eventuality of being snubbed. But don't be discouraged. Failure is the stepping stone to success. Go on. Let God be with you. Long live 'crow-catching'.

New Term Resolutions and Revolutions

Chengappa To come to the class as early as possible.

Thomas and party Not to hold separate classes during the agricultural practical class while the lecturer is telling something interesting.

Nambiar To take a bath at least twice in a month so as to smash all previous records and set up an example to his followers, the members of the A. B. C.

Story-teller Not to catch any more crabs by introducing frog's legs tied to a stick into crab-holes, as the animals will suffer much.

Hostel-steward Not to put water in the jugs on the verandahs as water is scarce and the monsoon is delayed.

Tobacco expert Not to interfere in the middle of a lecture too frequently.

Smoking volcano Not to absent from the classes for the sake of taking oil-baths and shaving.

Dhaincha expert To help the Grow More Food campaign, by lending his services fully.

Azimuddin To block all the windows and doors of his room and make it light-tight and air-tight, as a preliminary for future stay in A. R. P. trenches.

Hostel Radio driver Not to meddle with the radio too frequently so that it may work properly and the members may benefit by it.

Vincent Not to stay for more than 5 minutes in others' rooms.

Indian Women

By C. SRINIVASAN

SELF-forgetfulness and self-sacrifice form the focal points for which an Indian woman lives in an Indian home. As daughter, as sister, as wife and as mother, she lives to make the home an abode of peace, purity and patience. Her influence in the home is as great as that envisaged by her Western compeer under a civilization quite different in aim and aspect. The secret of this influence lies in her life of self-devotion to all that go to preserve the peace and prosperity of the home. She offers the most impressive exemplification of the fact that she sets herself wholly for the service of the family.

The nature of woman is evidently dependant in accordance with the concept of *Dharma* in every stage of her life, upon the father during girlhood, upon the husband in the middle age and upon the son in the advanced life. Though she is physically weak, she stands any amount of suffering and service. In the very organization of our society and home, an in its regulation, the woman plays no little part. It is not by strength and vigour that a woman gets distinguished, but by lovable service and suffering.

It is the law and custom of our land that lay hold on these endowments of nature and give it the environment needed for its perfect development, *i. e.* the life of honourable dependance on man. This does not mean a life of slavish subjection but it is freely assumed that they take the proper place in the home. The activities, the interests and the opportunities for earning distinction are entirely confined to the home. It is generally believed that if women engage in social and public affairs or for earning wealth and fame which the sphere of public life offers, this state of dependence which is so valuable to us and also suited to their essential disposition, will cease to be a reality. It is fiction to assert that our women do not receive any education at all but it is a fact that they do not receive an education which makes them into, like many of our men, endless quill drivers, rapid social reformers, or briefless lawyers. They are necessarily kept out of this because they are engaged in a more useful work of house-keeping. Even as matters stand, we have in our homes, women commanding genuine respect of all she knows. Indian women are quite satisfied with what knowledge they acquire at home, for it is considered sufficient for the due performance of their functions within the household. We all know her influence in all transactions of our domestic life. It is paradoxical enough, that even in a life of dependence she raises to unquestionable dominance in the conduct of the home and domestic expenditure.

Our educated men may struggle for years without success to dominate the province of house-keeping, having in view the family tradition so jealously guarded by the women of the house-hold. The religious life of the household is dictated by our women with their conservative instincts. The modern man's agnosticism and radicalism fade away before the determined Indian woman's pious devotion to her ancestral rites, customs and beliefs. "In the West, the woman is wife. To the Indian the whole force of womanhood is concentrated in motherhood. In the Western home, the wife rules. In an Indian home, the mother rules."

The existing conditions of the society in relation to the place occupied by women should never be altered. Any change to reform may destroy the very basis of our society. The excellence of this lies in the strength of passivity and can preserve itself against any insidious attempt to destroy the source of vitality of our ancient race.

Definitions

Gunter's chain It is a kind of chain used by hunters for tying the prey to a peg for hunting tigers.

Blastostyle It is the style of a flower with a polycarpellary pistil.

Monocyst It is a kind of reproduction common in the protozoan forms in which a single cyst is formed. Inside the cyst numercus forms are produced by division.

Pugmill It is a kind of machine involved in machine moulding. In this bricks are moulded by dry clay moulds. It is also applied at times to students who are able to mug well.

Educated-Weaned

By M. V. GOPALAKRISHNA SARMA

THE masses of any country, where progress is aimed at, look up to their educated brethern for leading them to a better and nobler plane in all walks of their life. In most of the countries the response from the latter is encouraging. But in our country it is otherwise. The reason may not be so clear as it ought to be; but yet it is there, vivid and visible, for those who bestow some attention on the conditions prevalent in this country. The pitiable plight in which our educated are placed is heart-rending. They have become the bane of the country in that they can support neither themselves nor others.

The gulf existing between the masses and the educated, as we find to-day, is very wide. We can call the intelligentia the "brain of the nation". There is a vital link between the sophisticated and the un-educated even as that between the brain and the body. Derangement of any one of these parts spells disaster for the entire system. Any move to bring about a drift between these two will disturb the equilibrium. If the country is to be rid of all these the educated must recognise their brethern, illeterate, as none else but the same stock from which they themselves have sprung up. They must feel and work as part of the populace. With the artificial barriers as are seen to-day, there is little hope of any real progress being achieved in the direction of ameliorating the distressed state of the people at large.

But unfortunately the educated are far removed from their natural seat of life. They have almost lost the identity with the life of the folk in the village. To them the village, with its supposed unbearable monotony, is least tempting, and the petty quarrels and quibbles are disgusting. They resent the very mention of rural life.

But the causes for this tragedy are not wholly theirs. They are brought up in an artificial atmosphere that supresses what all emanates from within. Having been stuck deep into the mud of false prestige, he who drudges from morn till eve will have no place in their mind. A thick opaque screen is placed between them and their toiling brothers who really feed the entire nation.

Having been trained thus the educated man will be dreaming of a rosy future, concentrating all his energies to win some laurels for himself. The last traces, if he has any, of his sympathies for those on whose sweat of brow he lives, will dwindle away into oblivion, when once he succeeds in his laurel-hunting. He who fails to get access to

what he aims at, feels helpless and slippery. He loses his self-confidence, and the future seems to him very gloomy and discouraging. He will be hovering between the outskirts of town and village, entering neither of the two; the former because he has been spurned in spite of his liking and craving, and the latter since he thinks it degrading to live there amidst rural folk.

We can now see how the educated have been weaned from the masses to the advantage of none. These two sections have been made into two water-tight compartments. Such isolation is harmful to the entire nation. Consequent on this segregation, the national standard in all spheres of life has been subject to steady deterioration. So it is our paramount duty, before it is too late, to dive deep into the whys and wherefores of this tragic state of affairs and soon establish a life-line between the intelligentia and the unsophisticated of the country.

First aid

Having attended a first-aid lecture, the young wife was quite pleased when the hubby came home looking and feeling seedy. Proudly producing her thermometer, she proceeded to take his temperature. The result so startled her that she sent a note to the doctor at once. "Please come at once, my husband's temperature is 136". Soon came the reply: "The case is beyond my skill send for the fire-engine."

Employ Agricultural Graduates

A modern war is a total war, so that matters of food production and problems of nutrition, are as much a concern of defensive and offensive warfare as the building of ships and aircraft. Hence technical agriculturists are as necessary to the war effort as engineers. It is not a question of guns or butter, it is really a question of guns and butter. *L. E. Kirk, J. Amer. Soc. Agron. Dec. 1941.*

The Final Blow

(A short story)

By NARASIMHULU

WE were then doing osteology in human physiology and on entering the lecture theatre, I beheld a new human skeleton, hanging from a stand. As it took a few minutes for the lecturer to come in and engage us, I sat gazing at the remnants of the human being, who was doing immense service to the student-world after his death. I was trying to imagine its owner's history both before and after death. Just then, 'boredom' entered the class room in the guise of a lecturer. I was taken aback at this expected but undesirable arrival. Outright he began his lecture and I had to follow him, though with a mild curse. Our lecturer did not seem to believe in the wisdom of doing one thing at a time. His amendment to this universal maxim was that 'two' should take the place of one, of course a matter of altering two letters. He would go on dictating and while we went on with the pen, he would his explanations, begin. Unfortunately we have no two heads though some had the privilege in mythology. Of course we all know how far our lecturer and we were successful in this dual attempt. Thus my thoughts about the skeleton vanished from my mind as darkness before the morning sun.

The 'great barons of my mind' did not allow any corner for the skeleton till I went to bed, after effecting a strict black-out, between the four walls of my room. As I lay on my bed, patiently bearing the music of the mosquito and musing on the skeleton, "the gentle thing, beloved from pole to pole" as Coleridge put it, took possession of me.

Suddenly the skeleton appeared before me not only clothed in flesh but also in fine garments, how beautiful and lovely! And narrated the following incident:—

It was a fine evening, calm and beautiful, in the month of May, when Mohan and I met for the first time in our lives, while going for a walk. Though we were accidentally introduced to each other we became friends and our friendship was cemented further, by frequent meetings. This friendship resulted in love for each other.

"I charge you, Kamala," he once said, "with the crime of usurping."

"How and why?" I enquired.

"By nature, as you know, I am an admirer of Nature. But now in comparison, She is next to nothing. Each touching scene that

passes before my eyes, makes me think, that grace, if at all they possess any, has been borrowed from you. Look at those green corn fields which fired to inspiration, by the gracefulness of your curls, are trying to imitate the wavy nature of your locks. The rich golden colour of the west, unable to compete with your rosy complexion, is receding into darkness. In short I transferred my love, admiration and adoration from nature to you!"

"By way of describing the graceful scenery you are uttering deliberate lies! But as per your transference of love etc. don't repeat the process once again!" I remarked with a laugh.

"Don't you prick my heart, my dear, with such harsh words. Though you utter them playfully, I am very much pained at the remark. My words are not lies, why! Not even exaggerations! You see those very flowers attracted by your beauty, are struggling to be detached prefering your locks. You know that Jagdish Chandra Bose once said that, when a lovely lady sees a beautiful flower, not only the lady wants to have it but the flower also equally desires to be in her locks. By-the-bye, when is our marriage to come off?" he asked, sending a smiling glance towards me.

"Why are you in such a hurry, Mohan. Hasty marriage seldom proveth well" I replied, returning the smile.

"May be," he said, "but, our marriage does not fit that description. I would we were married soon!".

"Let that be so!" With these words we started towards our house, hand in hand.

A few days after this incident, Raja Ram, a friend of mine, living in the same street as mine, called on me and told that he had something of importance to be discussed with me. After beating about the bush, enquiring about my health, and the whereabouts and welfare of one and all of our family members and relatives, he burst out—

"Kamala! I hold the olive in my hand. To be plain, I seek your hand in marriage".

This shock was quite enexpected and puzzled and perplexed me. Controlling myself I cooly told him, "Sorry, friend. I am not in need of yours. You may have the kindness not to speak on the topic any more".

"May I know what you mean?" he put in, with a face showing amazement, anger and shame.

"I mean what I say" I retorted.
"Then, is my offer rejected?"
"I can't but do so".
"Is there no possibility of altering your decision?"

"No, not at all!"
"I shall see". With these words on his lips he made an exit.

Two days later, Mohan told me that he was leaving our place the next morning with his father, for his native place. He assured me that he would be returning within a fortnight and promised that he would be writing to me. But later I did not receive any letter from him. Every morning would find me in great expectation in spite of consecutive disappointments. All my endeavours to get a clue of him were futile.

* * * *
* * * *

I was going through the strategic retreat of the German troops from X to Y, in the morning papers, when the post brought me a letter. Glancing at the writing I danced with joy for it was Mohan's. I rushed upstairs, to my room, to escape the notice of my mischievous brother. I carefully opened it and hurried through. Ho! what a surprise! letter in hand I fell to the ground.

What happend next, I do not know. When I regained consciousness, I found my brother and father sitting on either side of my bed and comforting me. After a time, my father went downstairs. I searched for the letter and read it again. It ran thus:—

Dear Kamala,

You will be greatly astonished to know that I have been married to my uncle's daughter. I was not able to go against my father's will. He denounced all inter-caste marriages and moreover my uncle's daughter is an orphan. She has none to look after herself and her property. Please excuse me. Shakespeare is right when he says marriage comes by destiny. It is vain to quarrel with our destiny. 'The decrees of destiny are immutable, its decisions have no appeal, what fates impose that men must needs abide'. Time is a perennial river and human beings are the suspended particles in its current. Two particles come together at times, float together for a time and finally they depart, as they should. I write this letter not in ink but in the blood of my heart, Excuse me. Adieu.

This time, I got wild not only with the author of the letter but also with the author who had been quoted. Did not that silly Shakespeare say that men are masters of their fates and that the fault is not in our stars but in ourselves. I doubted whether he has a heart at all. I sent a telegram, with the help of my brother, congratulating the 'usurper' of my heart.

Slowly I caught the wind of Raja Ram's wicked plans and evil intentions. The very place, which I liked so much was a disgust to me and the very scences which used to attract me hitherto were

mocking at me. They were even ashamed to face me. My disgust for this wicked world grew day by day and many a time I thought of putting an end to my wordly life. All these told badly on my health.

One day while at the hospital, I met the lord of my heart who did not even care to glance at me. When I saw him and Raja Ram, the cruellest of human beings, conversing intimately and sending a 'jeering' look towards me, my heart broke. Thus came the final blow and the worn-out string which bound me to this cruel world gave way.....

After undergoing so many processes at the hands of ever so many doctors, who ate up my shape and beauty (of course a blessing in disguise) I am now.....

At this moment, the terrifying skeleton stood before my mind's eye. Startled in sleep I dashed my leg against the table—the next moment, the lovely lady, the narrative, the skeleton—all vanished into darkness.

Latest Discoveries

The population of India is at the rate of 2½ people for every square mile —K. V. S. Murty.
The disintegrator is used for ceresan treatment—M. V. R. Somayajulu.
The heifers in the Palayakottai Cattle Farm deliver only male calves—C. S. Krishnaswamy.
The incubation period of tuberculosis is 3—4 days—M. V. R. S.
The alkalinity of the soil is due to the presence of salts in the soil, like sodium bi-sulphate, and is remedied by the application of Epsom salt.
Anemometer is a system of measurement adopted in the animal kingdom.
Castor seed is an example of nut.
Ipomea hesperidia is a tuber.
Aristolochia is a fodder grown in the wet-lands.

Phraseology of Agricol

By "GANI"

IT is not quite uncommon to come across certain curious phrases and idioms peculiar to a certain locality or institution. It may sound ludicrous to a stranger, but surely, it does give pleasure to use such phrases in our daily conversations. It is just a pinch of salt to make our chit-chat lively. Not only does it give charm to our talk but also lends fun and humour. If we just peep into the history of the coinage of such words, it will be interesting to note that it has always been prompted by some funny incidents or circumstances. We hear all sorts of malapropisms and 'bottomisms', of course not to speak of the mischievous touch of Mr. Pack who goes about in search of such materials. To be conversant with such phrases and to appreciate them fully, one should be aware of the antecedent or anecdote of each phrase or idiom.

Our college students are not, in any way, lagging behind in this respect. They can well nigh compete with any other institution in minting such phrases and idioms. Here are a few that are in vogue at present—Grade, Zambuck, Kommu, Bussing, Batting, I. P., Commentation, Awardment, Quarrellation, Thiring, Cockroaching, Sheet, C. C., F. Y. M., etc.

But unfortunately I am not aware of the time and origin of most of the above phrases, though I know their usage fully well. Indeed they form the legacy that our predecessors have bequeathed to us. Usually they are not what they were when coined. They have undergone ever so many changes and modifications brought about by the action of time, effort of individuals and the influence of environmental factors.

Enough of this "commentation", lest I should get a "grade" from the Editor, who, I understand, is "bussing" daily to town for the last one week, to purchase two quires of paper to type out the Tatler. Poor man! it seems he is daily getting only "zambuck" and not paper. Try, try and try again, Editor Sahib, but don't "buss"; that's too much of "kommufying".

If we did not trust one another,
We'd all have to live within our incomes.

Is it a Fact?

(If anyone of our readers is in possession of information, as to the truth or otherwise of these atatements and allegations, the Editor will be glad to pass on the information to others)

That Mr. S. Krishnaswamy, wears a *saree* and apes a nautch-girl whenever he is in the heat of discussions?

That Mr. V. L. N. Sastri attends the college 'physically' and not 'spiritually'?

That Mr. Krishna Iyer boasts, that but for the lac insect, we would not have got that Gramaphone, the 'music-grinder'?

That Mr. V. L. N. Sastri enquired of a shoe-maker as to the kind of leather of which the shoes are 'composted'?

That Mr. Janardana Rao feels giddy in his hind leg?

That Mr. N. Thyagarajan says that castor-oil is a saline purgative used in veterinary practice as an enema to wash the uterus?

That our Warden sometimes conducts experiments on the electric fan in his office in the Hostel, by keeping it switched on when he is out?

That Mr. Vincent goes round and round the long-block to collect waste paper to be sent to the Second-front?

That Mr. Chengappa is an expert at catching crabs using his newly devised method of introducing a rod with a frog at its end, into the hole?

That the formula of cupric chloride as discovered by Mr. Panicker is $CuSo_4$?

That one of the discoveries made by Mr. Narasimha Rao is 'an amoeba being eaten by a paramecium'?

That Mr. Nambiar and Mr. Sundaram Pillai have chosen the latrine for discussion?

That according to Mr. Suryanarayana Murty the evolution of plants is from sporophyte to gametophyte?

That Mr. Prabhakara Reddi threatens to resign his mess-representativeship every other day?

That according to Mr. G. Narasimha Rao, Black quarter is a seasonal crop?

That according to Mr. Janardana Rao, insects come under the big phylum Arachinida?

That Mr. Suryanarayana Murty takes refuge in the latrine whenever Mr. Sarma comes to his room?

That our Warden has issued orders prohibiting the issue of more than 5 'extras' to Mr. I. L. Narasimha Rao due to scarcity of foodstuffs?

That Mr. Krishna Murty prepares tissue-protein from cigarettes and beedies?

That the Government of Madras has appointed Mr. M. V. R. Somayajalu as the Information Officer of the Agricultural College?

That many of the First Years who had their interview at Coimbatore learned by heart many of the cricket rules, and some, the meaning of batting and bowling?

That Mr. P. A. Srinivasan's hat is sun-proof only when rain-proof cover is put on?

That the inmates of the Orphan Block were relieved of part of their distress when the A. R. P. trench was recently dug before their block?

Grow More Food Campaign.

THE whirl wind of the Grow More Food campaign has caught us in its grips. Rather we are already in it. The rationale of this compaign, every one of us knows. In the present war, Food is a munition of war. India was importing some food stuffs, mainly rice, from other countries, mostly from Burma. Now all those sources are cut off due to enemy occupation. To provide the population of India with all its food requirements we must grow more. This compaign was inaugurated in the Hostel on the 21st of October by our Warden Sri. P. A. Venkateswara Ayyar, B. A., B. Sc. (Ag.), with the help of students. We wish the compaign all success.

"Grow More Food"

Tiller of the soil,—arise and awake,
Life divine, in agriculture you make;
Crops of food we grow and raise
Are not sufficient in these days.
Our land of peace is in turmoil,
Starve you should, if you don't toil.

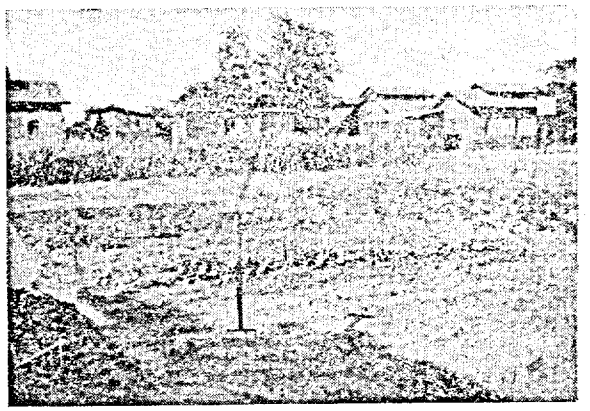
Burman rice will come no more
Our annual yield is so insecure
When land of ours doth tumble and break
Tiller of the soil—arise and awake.

Know you that Mother India is gold ?
All milk and honey in days of old ;
Ryots brave, you stand alone,
Fertilize the land you delve and own.

Bomb,nor mine can do us nought,
Land of culture, wealth and thought ;
On you depends your own salvation,
Get rid of your procrastination.

Garden, backyard, fallow and hill
Are not for sight, must needs to till,
For the food you need—what do you care ?
Rise up and stand lest you fall—beware !

Second year Students of the College preparing the area for more vegetables near the hostel blocks.



"Grow More Food" Crops of maize and Vegetables grown by Students.

"'Grow More Vegetables'—greens grown by Students".

Improve the method of cultivation,
Discard old practice without hesitation;
Rice and *cholam*, *ragi* in all village,
Be your privilege to grow by tillage.

From well and pond and tank and lake
By every means, water you take
Irrigated crops, do oft give more,
Animal husbandry adds a little more.

Manure you store by methods strange,
Keep it away from weathers' range;
Spinach, plantains, amaranthus, tomato,
For hunger forget not sweet-potato.

If for health we use pounded rice,
The problem of food is solved in a trice;
Comfort you want? do strain and sweat,
Your granary is full—ought be full, I bet.

Potato-sweet, makes for grains deficient,
In stress and strain we keep efficient;
Why cringe your hand—but follow a plan;
Earth divine is there, to help every man.

Oh! brother farmers! of every kind
Grow and eat—do not look behind,
Mother earth is kind to all improvement;
Forward, forward Agricultural Department.

K. Sanjiva Shetty

A military practice was taking place in the country side. The different 'Armies' were making manoeuvres under actual fighting conditions. An old woman unaware of all this, was passing along a road when she came to a bridge that was being guarded by a sentry on duty. When she was about to pass over the bridge, the sentry objected to it. When she asked why, the sentry replied—

"This bridge was blown off by the "Enemy" two days ago".

The old woman could not believe this as the bridge was apparently all right. So she asked another soldier who was passing along that road. He replied.

"Sorry madam, I was killed two days ago."

Four Fingers and a Half

By L. N.

EIGHT P. M. on a cold December night; the black-uniformed guard flashed the green light, and with a lusty whistle the Express commenced her long lonely journey. Passengers were not many that night, and the carriages were practically empty. Myself and another gentleman were the only occupants of a spacious eight-seater. I spread out my bed, and took my seat near the window. The gentleman opposite sat with his hands buried in the ample folds of his huge coat collar. His head was bent with chin resting on his chest. "A morose oily fellow", I muttered to myself. As the wind was raw and cold, I put on my 'monkey-cap' and obeying a primitive impulse peered out into the open to enjoy the beauty of the city environs by the night. The sight was fascinating. The electric lights, scattered far and wide, seemed to exult in wild delight, and I fancied, I even heard them scaring and shouting away at the pressing darkness.

Soon the gaiety and glamour of the city vanished and the train hurled itself into the vast blackness. It was newmoon night, and the occasional red flashes from the engine room throwing lurid glows on the open waste made the 'darkness plainly visible'. With a sigh I turned my eyes to my immediate neighbourhood inside the cosy compartment. My silent partner was still in the same posture. "Rubbish"! I said to myself, and taking the 'Hindu' a copy of which I secured at the book-stall on the platform attempted reading for a diversion. But the jolting caused by the rumbling of the rolling stock made it a sorry affair. Sleeping was out of the question though there was plenty of room available, because to oblige an over-solicitous friend in the city I had taken a cup of strong 'Madras coffee', late that evening. Talking was the only diversion I could next think of, but I wondered whether the stiff figure opposite me was in a mood for conversation. Reluctantly I grabbed the paper again and looked at the pictures on the last page.

"Any news, sir" asked the gentleman unexpectedly. I looked over, glad to have an opportunity for talking and I saw him studying me closely "Oh not much, but you can have the paper" I answered. "No thanks, I am averse to reading while riding because one can enjoy neither" he said and put aside the paper.

I noticed that his left hand was swathed in a loose white cloth.

Taking out a bakelite-case he chose a cigarette and offered me another, which I accepted with thanks. He lighted both as per etiquette and I observed the bandage did not inconvenience him. It was

too loosely tied to be useful as a bandage and too cleverly done-up to be mistaken for anything else.

As if reading my thoughts he smiled and said "you are wondering at the kerchief on my left hand. Is it not? But do you believe in ghosts?"

"Why?" I querried amazed at this abrubtness. "Ah" he laughed aloud, "right in the middle of this twentieth century when man is about to overtake nature through marvellous scientific achievements, it does look funny to talk of believing in ghosts. I can quite understand your bewilderment. I am myself a scientist. Nevertheless I do believe in ghosts." He looked at me squinting his eyes.

"I had a personal experience, sir," he continued "and you will see tangible proof of it by and by. Let me narrate".

I was quite puzzled at this eccentric sort of gentleman, nevertheless, I got interested and settled down to hear his narrative.

"Well sir", he resumed, "I am a plant breeder interested in improving the quality and yield of the cotton races. Last year I had to work on a cotton farm in one of the hot dry districts of the Presidency. You know that cotton, unlike paddy, thrives in places where water is scarce. Places without good supply of water throughout the year, I believe, must be uncivilised and the people so crude and primitive in their outlook on life that superstitions do seem to have some truth there.

"One night as dark as this I entered a cotton field at 2 A. M. with the watchman of the farm carrying his lantern. The purpose was to make nocturnal observations on a few selected plants. It was my desire as with most other members of my fraternity to discover some phenomena in the vital activity of the cotton plant that could be offered as a homage at the shrine of truth. The night was sultry and except for the crunching of our heavy tread on the hard soil there was no other sound. I started my observations and was soon absorbed in my studies. Sometime after, I suddenly became aware of a faint cough nearby, I thought it was the watchman and did not worry further. But I heard it again, this time louder, but certainly not from the direction of the watchman. Then in the stillness of the night I heard a clear voice say "Oh! how greedy these plant breeders are." It was not the watchman for I knew he could not talk English. He was startled at the sudden change in my behaviour and looked at me suspiciously. "Did you hear anybody talk?" I asked him doubtfully. "No sir, no one is here" he answered quickly. I now got worried and began to feel nervous. My thoughts changed from science to ghost folklore. I felt a creepy sensation of terror. My fear heightened when I heard a hyaena-like laugh. "Didn't you hear that now" I screamed, catching hold of the watchman in a frenzy.

"Hear what" he said laconically and looked very much puzzled. At first he thought I was unwell, and that I was in the throes of a hysteric fright, but when I repeated my experience and dwelt on the possibility of gnomes and goblins roaming in the midnight, his countenance also fell. The light in his hand was burning bright. As I watched the steady flame I beheld a most uncanny sight. A bare hand as yellow as the light darted out somewhere from the murkey gloom and turned the pin of the lamp. The wick lowered and the flame burnt low. The watchman was now visibly agitated. Though he did not see the hand he could not mistake the sudden dimness of the flame and he must have even heard the click of the pin. When I told him I actually saw a hand, he jumped with a scream and flinging away the lantern took to his heels shrieking "ghost, ghost"! I too started to run but felt violently pulled by somebody. This time I could see something which I fancy must be a ghost. I saw a bright human head huge and spherical as the dome on an ancient minaret. It had clear facial features, but the face was so transparent that I could see through it the hazy stars twinkling in the dim horizon beyond. It had no trunk or legs. I could see the face and two hands only. These were suspended in the air in correct proportion relative to one another in position. As I looked on helplessly the sly face winked and smiled. It was mischievous but full of liveliness too, "oh! how greedy you are!" it repeated adjusting itself before me. I was encouraged by the smiling familiarity though its bizarre anatomy kept my fear in full tense.

"Look here" it spoke, "I will show you rare sights in the cotton land but you must promise me not to injure or take away anything. I wish you put your razor and other dissecting appliances into your pocket. Do you promise?

"Yes" I nodded.

"The next moment I felt I had turned round the corner of a dreary lane and I found myself standing on the threshold of a gorgeous panorama of glorious and splendid exhibits of rare and unusual cottons, the like of which I could never have fancied in my wildest imagination. There were plants bearing cotton in their burst fruits so full and profuse that the stem and branches were completely hidden. There were plants on which I could see beautiful bleached skeins of yarn from the fruits instead of the routine raw cotton, a few with actual woven pieces of cloth in their fruits, and yet a few on which I could see different kinds of cotton fabrics, shirtings, coatings, turban cloths, stuffed in the huge gaping fruits. But the most fascinating of all was a group of plants which had bright coloured raw cotton in their fruits. All the 'vibgyor' colours were there. With such cottons there was no need for dyeing. Bright and fast-coloured *sarees* could be woven from yarns of these rainbow-coloured cottons. The ghost went on explaining; I do not remember what all it said.

But my mind was fixed on the coloured linted fruits. I longed to possess some seeds. I forgot the promise I had made to the devil and in a rash moment I took the razor from my pocket and holding it in my left hand was about to reach for a fruit when I felt a terrific blow descend on the nape of my neck. I reeled and fell down, my left hand gripping the handle of the opened razor. While falling I experienced an agonising pain as though something was cutting away at me.

When I came back to myself it was broad day-light. A group of men were standing around me whispering anxiously. They said I must have swooned in a fit of hysteria and fallen over my razor. They would not believe me when I recounted my ghostly experience. Instead of listening to my account one and all of them looked at my left hand. It was only then I came to know of a grave personal loss. My left thumb was cut and the severed portion was lying a few feet away. A group of ants were hovering about the dead tissue. The cut end was clotted and swollen. The moment I made the discovery I felt a throbbing pain shooting from my amputated finger. It was so severe that I cried like a child. I was taken to a hospital where the injured thumb was attended to. And now, look—".

He held up his left hand and quietly removed the kerchief which had puzzled me all along. It was apparently healthy and there was no mark of recent injury or wound. But the hand had only four and a half fingers. In the place of the normal thumb was a squat, stubby tissue probably the lower-most phalange. I could see that the deformity was the result of an accident and not congenital.

"Do you believe in ghosts now?" he said gripping my shoulders suddenly and giving me a vicious shake. This was indeed an unexpected turn of events and I got more alarmed not to speak of the pain caused by the grip, when he stood up tightening his hold on me.

The train was slowing down. As I was wondering what would happen next he erected himself and in so doing knocked his head violently on the luggage rack above. Immediately he let go his hold and sat limp in his seat. He stared at me for a while like a man in the moon, and in the stare was the glint of murder. He attempted to smile but it expanded to a hideous grin and the oral muscles did not relax until the train came to a halt at the junction station.

As if awaiting, I hastily rolled up my bed, and stepped out of the compartment. The gentleman with four fingers and a half followed me up to the door and said in a tone of unusual sobriety "Sorry Mr. I don't know your name, but are you alighting here?

"No," I said gingerly as I stepped into the next compartment. "I need a quite undisturbed sleep. That is all."

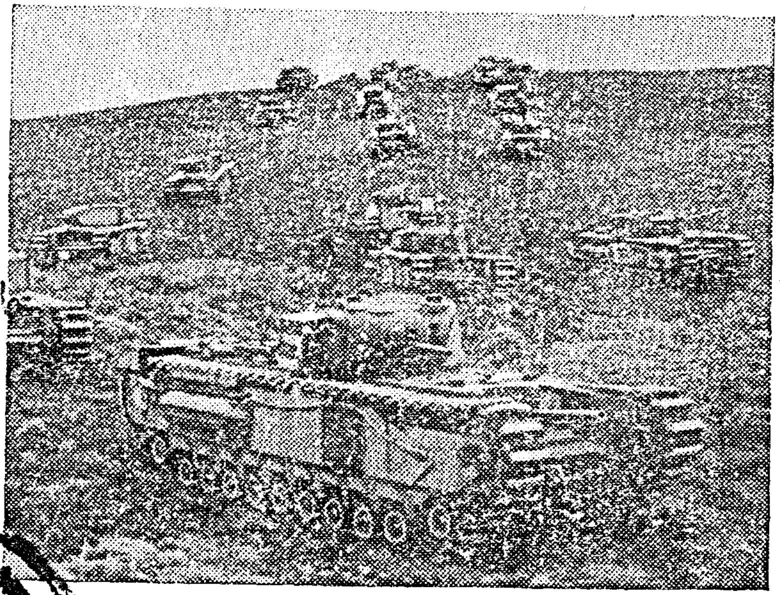
The Express resumed her journey.

Obituary

Y. V. S. S. S. Narasimhamurty Yerramilli Venkata Satya Surya Subramanya Narasimhamurty, comes of a middle class family of Tadepalligudem in West Godavary District. He joined the Agricultural College in the year 1940. He met with unexpected death due to short illness in the summer of 1942, after passing the Second Year University Examination. He leaves behind his young wife, father, mother, brothers and sisters and a host of friends to bemoan his loss.

Our heart-felt condolences are for his parents and his wife.

Dr. N. R. Rajaratnam Dr. N. R. Rajaratnam, G. M. V. C; P. G. (Edin.) comes of a christian family of the South. He passed out of the Veterinary College, Madras with a diploma. After some years of Government service, he proceeded to England for post-graduate study. He worked in our college for sometime as the Lecturer in Animal Hygiene. A man of very sociable disposition, he was our teacher both in and outside the college. Unfortunately, after his transfer to Saidapet he met with accidental death. He leaves behind his wife, sons, daughters and a host of friends to bemoan his loss Our most sincere sympathies go to his family in their great loss.



British heavy infantry tanks—Each a small fortress in itself. "Churchill" heavy infantry tanks—A picture taken on manoeuvres some time ago. The "Churchill" is so strongly armoured that it can be used as a pill-box, but at the same time it possesses a remarkable speed. Six-pounder guns give it a formidable fire-power.

The Madras Agricultural Students' Union.

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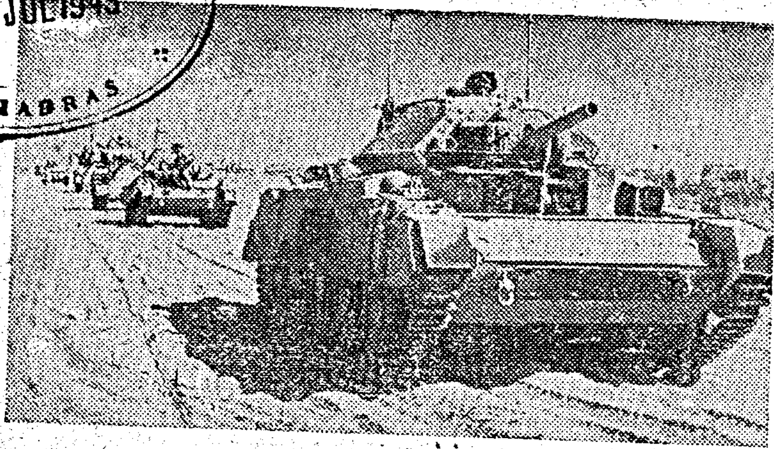

SU. 36.

Victory in the Desert: 8th Army Tanks driving the Axis forces out of North Africa.

Picture shows: More headaches for Rommel! A long line of 8th Army tanks moving up to the battle area, during the earlier stages of the Allied offensive which has driven the Axis forces over 1,500 miles out of Egypt, Libya and Tripolitania.

ST. 22.

Boys who Bombed Berlin—Two nights running.

8,000 and 4,000 pounders were dropped. The skipper of the Lancaster crew is a Canadian flight-sergeant (third from left).

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