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EDITORIAL

Madras Debt Relief Act upheld. The validity of the Madras Agriculturists Debt Relief Act was challenged before the Federal Court, New Delhi in the form of an appeal in which it was contended that the Provincial legislation encroached upon a forbidden sphere viz., Negotiable instruments or promissory notes which fall exclusively within the domain of the Central legislature, and as such the inclusion of debts due under negotiable instruments under the Madras Act had rendered the Act wholly or partly invalid. In dismissing the appeal, the court by a majority verdict upheld the Act and declared it valid. The learned judges held that it was inevitable that legislation purporting to deal with subjects in one list may touch those in another list and consequently different provisions of an enactment may be so closely intertwined that a strict verbal interpretation would unjustifiably invalidate several statutes. They therefore felt that as per the rules evolved by the Judicial Committee, the statute should be examined to ascertain its 'pith and substance'. Under this test, the Madras Debt Relief Act was not meant to be a legislation with respect to negotiable instruments or promissory notes and the overlapping of the Provincial Act was only incidental. Moreover the alleged repugnance of the Madras Act to the existing Indian Law was cured by the previous assent of the Governor General and consequently there was no justification to declare the Act wholly or in part inoperative. The judgment of the Federal Court in what may be considered as an important 'test case' is of great consequence to the agricultural community of the province. The possibility of the overthrow of the Madras Act by the highest legal authority of the land spelt disaster on the economy of the small agriculturists who were just beginning to benefit from a piece of wise legislation calculated to salvage them from a condition of age-long indebtedness to the usurious money-lender and the extortionist land-lord. The Act has now passed through several vicissitudes and it is a matter of satisfaction that it has steered clear of another dangerous corner.

India to grow flax. We are glad to note from a recent press announcement that attempts are being made in some parts of India to grow flax. An essential commodity in peace, flax has assumed great importance during the war. Flax fibre forms the foundation of such important materials like seaming twine and high class cordage so essential for the manufacture of

canvas goods, leather goods, tents, tarpaulins, fire-hose etc. which are required for eguipping the army, navy and air force. Though India has no reputation for growing flax as a fibre she happens to grow 4 million acres of the linseed plant (*Linum usitatissimum*) which is botanically the same as the one which yields flax. We are aware that the strains of *Linum* which produce high grade flax are different from those which yield linseed. Yet it sounds strange that in a great continent like India which possesses an astonishing variety of soil and climatic conditions, no serious efforts have been made to study the possibilities of flax culture. In 1938, the world produced 800,000 tons of flax fibre of which the contribution of the British Empire was only 1 per cent while her domestic requirements were ten times as much. The deficit was supplied by important producing countries like the Soviet Union, Poland, Latavia, Lithuania, Estonia, France and Belgium. With the outbreak of the war, these sources were closed to Britain and she had to fall back on the resources of the Empire. The importance of the commodity can be gauged from the fact that last year the British Ministry of Supply sent 400 tons of flax seed to Australia to sow 13,000 acres, the condition being that growers would be paid £5 per ton of flax straw produced.

Flax is reputed to grow luxuriently in moist areas with a mild climate. Being a crop of about $3\frac{1}{2}$ months' duration, it should be possible to find suitable localities in the Madras province which should prove suitable for, flax culture. Even in western countries like Ireland, Russia and Belgium human labour is largely employed for such operations like pulling, rippling, retting, drying, rolling and scutching. For these reasons, the cultivation of the crop and the preparation of the fibre for the market open out great possibilities for the province. We trust that the Government of Madras will launch some experiments to study the possibilities of flax culture in the province.

Land Reclamation Methods—*Sequelae* to Soil Erosion

BY M. SATYANARAYANA, B. A., B. Sc. (Ag.),

Farm Manager, Agricultural Research Station, Samalkota.

Introduction. In the agricultural countries of the Old World, farming for several centuries has not significantly reduced the productive capacity of the land, because Nature-induced erosion was always kept under control, through *conservation* farming, as opposed to *exploitative* farming which is the primary cause of man-induced erosion In the words of Sir Daniel Hall, "the methods practised by the pioneers in the development of a new country are rarely those of sound agriculture... ". To capture the international trade in agricultural commodities, all opportunities, as they arose in the last World War, were harnessed and soil fertility was bartered away for the precious metal, as so much produce exported is so much soil fertility driven out of the land. Deforestation, to meet the needs of wood for fuel, cellulose, explosives, newspaper, books, rayon, match sticks, paints, varnishes &c. and to bring more land under the plough, for agricultural produce, brought in its wake, floods, erosion and the desert. Forty million acres were worked in this way, in the U S A. (Africa is no better) and were abandoned during the World Economic Depression, from the erosion that resulted through faulty land utilisation, mainly mono-culture Wild floods are unknown in areas not tampered by man. The cities, railways, roads, hydro-electricity, water supply schemes, irrigation and navigation projects, all secured through forced production converted to astronomical bank balances, are shaken in their very foundations, by erosion induced by man, through deforestation and floods. To quote Jacks and Whyte, "more soil was lost from the world between 1914 and 1934 than in the whole of previous human history." The combined effects of boom, slump and drought produced a catastrophic biological and physical deterioration of whole regions, culminating in dust storms and floods which threatened to become fixed events in the calendar of North America.

The toll of erosion. The uneven surface of the land, the incapacity of the soil to permit of percolation of rainwater as quickly as it is received, the annual uneven distribution of rainfall and the whole of it finishing off in a few downpours are the familiar causes of soil erosion. In the stupendous quantities of soil let down annually, fabulous losses in nitrogen, potash, lime and humus occur, when compared to the normal intake of plant foods, in such soils. The muddy water of rivers, laden with the eroded soil, silts up the spawning beds. Turning into the up-country, the soil originally teeming with life, is rendered lifeless. None can gainsay Nature's decree. Land is never restored to its original state, but is reclaimed to some extent, by some of the methods given below.

* **Paper read at the Twenty-ninth College Day and Conference of the M. A. S. U.—July 1940.**

Methods of Reclamation. All reclamation methods of eroded land go under four broad groups. They are (i) Mechanical, (ii) Agronomical, (iii) Biological and (iv) Socio-economic.

(i) **Mechanical Methods of Reclamation.** The slow but persistent removal of the final fractions of valuable soil under ' sheet erosion ', the wash out with squally violence in ' gully erosion ', the dune and desert formations from ' wind erosion ' and the engulfing of productive land by ' sea erosion ' may all be arrested, by adopting suitable courses of action, individually, communally or regionally, by resorting to minor works such as contour terracing ; contour hedging ; contour trenching ; contour ridging ; tilling across the field gradient ; damming ravines ; throwing embankments across 'dongas'; erecting dikes; arranging 'pockets and spill ' ways and providing storm water drains.

Individual. The use of these methods to counter-act erosion, are known to the Indian pesantry, from time immemorial. All agriculture on the slopes of the Ghats have been rendered possible, by a knowledge of the above. In the slack periods the peasantry annually mend the havoc of past denudation and attend to necessary work to prevent future erosion. The thousands of small seed bed tanks and ponds spread over the vast Godavary Western delta are no more than the " pockets and spill ways " that are suggested on the subject to control erosion. Quite apart from the various measures cited above, there is nothing to equal the will of the farmer in averting on his holding, a distant catastrophe of whatever magnitude, by the timely close up of the imps that tend to gnaw the entrails of the soil. The orchards, in the villages of Nandarada and Dosakayalapalle of Rajamundry taluq, are some of the best that deserve mention in this connection, notwithstanding the erosive nature of the light soils on which they are raised.

Communal. In the Godavary Western delta, a number of Joint Stock companies are working in projects like the Losari- Gultlapadu, Vemuladeevi, and Kalipatnam, in reclaiming lands, from a number of evils, of which erosion is one. The soil of these projects rendered into a syrup, by the floods overflowing the embankments of the drains, is transported bodily. In some of the States in America, the Soil Conservation District Laws give scope to farmers to co-operate and undertake demonstration projects, of soil conservancy. ' Badava ' lands all along the sea-board, in which paddy and finger-millet are cultivated, are periodically overrun by tidal action. Such lands in the villages of Komaragiri and Neman of East Godavary are protected by bunding against the sea-flow.

Regional. The larger interests of a province, or a country can never be served, by a few joint stock companies. State effort in 'bunding in Belgaum, Dharwar and Bijapur districts, in contour ridging (Watt-bundi) in the Kangra district and in contour trenching in the Punjab and the U. P., has already achieved substantial results.

What is required for this Province is (1) the conduct of a survey of the areas suffering from erosion and needing reclamation ; (2) long-range planning for taking up and finishing the ameliorative operations, by zones and under stated periods of time ; and (3) the inauguration of a minor engineering department, for tank formation and tank restoration. Erosion, in areas of poor soil binding, is a great menace. In such, the preservation of the catchments to be formed with forest reserves and vegetation, and the rivetment of the bunds to be put up, may never make the works 'productive' in the P. W. D. sense. The tank formation and the tank restoration, in the province, may easily cost several times the estimated cost of the Tungabhadra project ; but the resources of the country will be permanently improved in a manner comparable to the State drive in Italy, where a swampy expanse has been metamorphosed into arable land and the scourge of malaria driven out. The Tennessee Valley in America, would be spending to the tune of nearly 400 million dollars, for the ten years ending 1943, in the reclamation projects of eroded lands. In Japan with the " operation of the natural forces of sedimentation, plant succession and re-vegetation " under the check-dams of the Forest Engineer, erosion is checkmated. Japan and Java, " two islands with highly erosive topography and climate and supporting 500 and 680 people per sq. mile ", have erosion under full control.

(ii) **Agronomical Methods of Reclamation.** The free play of sun, wind and rain on bare soil brings about erosion. It is therefore necessary to have 'plant cover' on the land, at least during periods in which erosion is the greatest.

Sound rotations The rotations to be practised are to be such as would (1) minimise the periods of fallow, (2) produce crops producing a dense stand and a soil binding root system and (3) provide for recuperative crops that give nitrogen to the soil. Unoccupied cultivable waste, when brought under cultivation is first put under horse gram, which is a leguminous recuperative crop producing good plant cover. Cotton, maize and tobacco, that require to be spaced widely, are generally unsuitable as reclaimers and have to be rotated with those which produce a good plant cover. The experience of Mr. Kanitkar, of the Bombay department, of Agriculture cuoted by Dr MacLagan Gorrie, goes to show that sorghum, which figures prominently, in the rotations of the eroded black soil tracts, is a good controller of erosion. The following typical, age-long, dry-land rotation, of the loams and the clay loams of the Telugu districts, is a protector of the soil and affords plant cover for a great part of the year.

1st year :— Mixture of dry paddy and red gram ;
2nd year :— Chillies with rows of cotton at intervals ;
3rd year :— Groundnut followed by coriander ; or Bengal gram, or fodder sorghum, when conditions permit.

Unfortunately such rotations are not regularly practised by the cultivators who are lured away by money crops like chillies which are raised annually, as at Gollaprole in Godavari district. Mono-culture systems as maize in the

corn-belt and cotton in the Southern States of America, and cotton followed by maize in Uganda are said to be the causes of the disastrous erosion, in those countries.

Green manuring. Sometimes in preventing one evil, we may bring about another. Incessant cropping done with the object of securing a plant cover may bring about soil exhaustion. Secondly, with the onset of the monsoons, heavy masses of soil are rolled down streams, breaching embankments. A number of wild streams between Bezwada and Kovvur play havoc on the country, every year, in their traverse to the Kollair lake. Raising green manure crops is a panacea to these evils. The matted root system, binds the soil and prevents to some degree, this scouring of soil by floods.

Mixed Farming. For a country dependent on cattle for its agriculture, mixed farming provides the cattle with diversified feeds, and conserves the land by warding off erosion. A Telugu proverb condemns the practice of raising of pure crops under rainfed conditions. Run off and erosion figures collected for a number of years at the Missouri Experiment Station, Columbia and the observations of Dr. MacLagan Gorrie in this country, indicate that in the order of their importance bare fallow, sound rotation and pasture aid soil conservancy.

Limit of safe productivity. Under the perennial irrigation system of the deltas, raising two or three crops of paddy, in an year or garden crops which are gross feeders on soil fertility may impoverish the soils.

Site of plots and soil blow. The fragmentation and the disintegration of holdings are a blessing in disguise, in lessening erosion. Plots of half to two acres are found to be fairly free from erosion, in the Bombay Presidency. Such divisions of land are a necessity, in the light soils of Anantapur, where the harvest of groundnut with bullock hoes turn the soil to the fineness of flour and render it liable for wind erosion.

Strip cropping. Strip cropping with arable crops alternating with 'dense sod crops', is now under practice, all the world over, as a conservancy measure.

Selective weeding. This is in vogue in plantation agriculture, for soil conservancy. Obnoxious weeds above are eradicated, while the less harmful are left untouched, in the tea, coffee and rubber estates, in Ceylon and South India.

(iii) Biological Methods of Reclamation.

Regulation of the strength in livestock and controlled grazing. Strangely, the very factors that retard progress in livestock improvement, also assist erosion. Greater destruction of plant cover and heavier indiscriminate trampling arise with the maintenance of a higher proportion of cattle than is justified by the cultivated area. The Vizagapatam district (specially the Vizianagaram taluq) is one of those suffering greatly from soil erosion.

It may be due either to its red loams ; it may also be due to the stock-rearing industry, in that district. The trodden paths of cattle and goats assisted by scouring in rainy periods bring about gully erosion. The village commons and the unreserves thrown open to grazing get greatly eroded, through such indiscriminate trampling. The pasture grasses grazed bare, fail to recover in time, to be economically useful. Controlled grazing and cutting the grasses periodically sound well toward stock improvement as well as the prevention of soil erosion. But to do away with the over-stocking and un-economic herds in a country that is averse to the destruction of life is no easy matter. Are sufficient areas available even for the indispensible tilling cattle, to arrange for grazing by rotation in blocks, for the permanent preservation of pastures ? In the tracts of intensive cultivation, as well as in wetland areas, it is hardly possible to have standing room for the village cattle, especially during the inclement weather. This has been a thorny subject receiving attention for several decades. Educative propaganda and slow state intervention, with caution, would secure the desired object of getting rid of the un-economic herds, over-stocking, promiscuous grazing and the want of organised pastures.

Regulated forestry. The forest policy should not be pursued as a commercial revenue proposition. Forest preservation and controlled grazing are antagonistic to the world's needs of wood and meat, but all the same they are to be helped in the interests of national economy. The very many uses which wood is now put to, may bring in, a time, when forestry may be encouraged and made to encroach on agricultural land. Submarginal exhausted agricultural land may be re-forested, or brought under controlled grazing, as under the Taylor Grazing Act of 1934, in America.

Ecological engineering and re-vegetation. Ecological observations of the flora and the fauna on the land, as also a study of the habits of the communities settling on the land are necessary to practise ecological engineering, for soil conservation. New fauna (from the domesticated) should not be introduced, if they bring in degeneration of the flora *in situ*. Nor should man be permitted to dominate and disturb the balance existing between the land and the flora it is supporting.

Extensive cultivation is going on, in the sandy loams of the coast-wise areas, under *doruvu* wells and along the banks of the rivers Hagari, Pennar &c. that have sand in them and no water flow for a greater part of the year. In both the kinds of tracts, the water bed is fairly high and manure being the only limiting factor of production in them, quite a variety of valuable crops is raised. Unfortunately, the play of strong winds on the coast, as well as in the areas of low rainfall of the said rivers has led to erosion on the wind-ward side and dune formation on the lee-ward side. Wind-breaks and shelter belts in which bare land alternates with crop land are the main ways to deal with. Casurina is widely grown on the coast and to some extent on the afore-mentioned river banks and adjacent to the banks.

Shelter belts are greatly used in the Jutland peninsula, of Denmark and are claimed to give protection to areas "equal to ten to twelve times their height". In addition to the moderating influences on soil temperature, wind, humidity and evaporation, high crop yields up to thirty per cent are also reported.

Soil binding may be effected with re-vegetation by suitable ecological material. The trees that are used for the purpose, in the several countries of the world are Acacias, *Cassia siamea*, casurina, Eucalyptus, Festucas, Pines, poplars, spineless cactii and willows.

The following are the vines, creepers and grasses, in vogue for the purpose, in the various countries.

Botanical name.	Common name.	Country of use.	Remarks.
	Vines and Creepers		
Pueraria thumbergiana	Kudzu vine	U. S. A. and S. Rhodesia	Originally a native of China; propagated from roots and crowns
Bignonia radicans	Trumpet creeper	U. S. A.	
Strophostules helvola	Trailing wild bean	do.	
Lespedeza striata	Lespedeza	do.	
Ipomdea biloba	Sand-binding weed	India	Used by the railways on the permanent way.
	Grasses		
Eruarta villosa	Pyp grass	Africa	
Cyanodon dactylon	Bermuda grass	India	'Hariali', or lawn grass
Agropyron scabrum	Blue grass	New Zealand	
Aristida pennata	Sand grass	Russia	
Eremochloa ophiuroides	Centepede grass		
Pennisetum clandestinum	Kikuyu grass	India, Africa	
Andropogon halepense	Johnson grass	do.	
Paspalum sp.	The kodo millet group	do.	
Agrostis sp.		do.	

Besides possessing the property of soil or sand binding, the material chosen should be drought resistant, rhizomiferous, stoloniferous and of the seeding kind, for rapid establishment. It should as far as possible be unpalatable (e. g, rabbit menace in S. Australia and locusts in Kenya), hardy in withstanding soil and sand blow and as far as possible indigenous. Turfs and sods serve the purpose quicker than vegetation through seed propagation.

(iv) Socio-Economic Methods of Reclamation.

Restriction of international trade in soil fertility. The soil is a mine from which fertility is drawn and transported across the seas, in the name of

produce. The high tariff wall built by U. S. A., against the import of agricultural commodities, after the last World War and its non-acceptance of payments of war debts in goods, assisted soil conservation and thus arrested erosion in a measure, though countries solely dependent on agriculture under the falling prices, following the boom had to resort to over-production, to make both ends meet.

The higher the standard of living of the ryots, the greater is the erosion. The impact of western civilisation, on the agricultural populations of the East, raised the standard of living of the latter, during the last three or four decades. The agriculturists of Egypt and India, for centuries adjusted their mode of living to the productive capacity of the soil. Better living enjoins over-production and therefore erosion ultimately. Present rural uplift work should countermand this evil, by necessary propaganda.

Capitalist farmers and industrial magnates. Capitalist farmers emulate industrial magnates, in the possession of wealth and style of living. Agriculture is not organised, in the same way as Industry. Agricultural produce cannot be preserved, nor can it be held over, for years, to regulate prices, as industrial goods. Where the capitalist farmers ape the industrial magnates in the bank balances and style of living, there it is at the expense of the soil, degradation and denudation coming in much quicker in this capitalist farming than under any other system.

The Agricultural Adjustment Act, in America, restricts agricultral production, by the allotment of areas, to the limits of the local and reasonable foreign demand, based on a sound national economy. The co-operation necessary for the working of the Act is secured by compensating for the reduced production.

Agricultural prices to be on a par with the industrial. For an agricultural country like India, agricultural prices must, at least, be set at par with those in Industry, marshalling all the resources of economics, so as to keep the soil fertility intact. The soil of the country, the capital legacy of past generations should be handed down to posterity, by the present generation, without consuming any part of its capital.

Society and the Soil. A stable soil keeps a civilisation stable and free from social unrest. The society that settles on the soil should be symbiotic in its nature and its habits, with the farming system the soil is capable of. In this vast agricultural country, each soil type can have its counterpart in society, be it aboriginal, tribal, *ryotwari*, or any other. The Soil Physicist and the Agronomist are the councillors, to determine the type of Federation that is best suited to perpetuate agricultural India.

Imposition of quotas. In the national economy of the country imposition of quotas on cultivation and production may, when necessary, be introduced, to avoid the burning of wheat and the leaving of the cotton crop un-picked. The creation of an economic bureau, for sound economic nationalism, would go a great way, to stem the tide of soil erosion.

Urbanisation promotes soil erosion. As urban prosperity is at the expense of the rural agriculturist, the burden of taxation should be shifted from the country to the town and from Agriculture to industry.

Land tenures. The system of tenures, on which land is held by communities, is responsible in some measure, for soil erosion. Southern Rhodesia has been a victim to it. Russia passed from Feudalism, Communal Field Farming, Capitalism and Collectivism, to Socialism. How far the last survives the earlier systems, on the steppes of Russia is yet to be seen.

The holdings of owner-cultivators are less liable for erosion than those under tenants. With the ease-loving habit of man, the strength of the owner-workers is falling and that of tenants increasing. Short term tenancy is a result of rack-renting and lands under this system are the worst liable for erosion The systems of tenures that should prevail, between land-lords and tenants, for soil conservancy and doing away with erosion are also subjects for the bureau of economic suggested for creation.

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Tenants' Needs and Departmental Limitations.*

By M. BALAKRISHNAN NAYAR, B. Sc. Ag,

University Scholar in Agriculture, Madras.

Introduction. This paper is based on my study of a few holdings in Malabar with regard to the economics of paddy cultivation. It has been my experience in the course of the investigation, which is being conducted under the auspices of the Madras University, to find the people mostly indifferent and sometimes critical about the doings of the Agricultural Department The causes of such indifference, as I see them, are presented in this article.

General. Earnings in Agriculture may be generally poor but the level is particularly low in the conditions existing in the Malabar district. With no mixed cropping or rotation in crops, paddy is grown in wet lands year after year with the success of the crop depending largely on the south-west and north-east monsoon rains. The cultivation is further complicated by the

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system of land tenure peculiar to the tract. The ownership of land is vested in a comparatively small section of the people styled *Jenmis*, while cultivation is carried on by a large body of tenants and under-tenants. Rice is the staple food of the people; and the tenants who are mostly small-holders, bear the brunt of food productions.

Needs of the Tenant Farmer. The fields have to be prepared before sowing seed and the tillage operations involve the use of cattle and human labour. Implements have to be assembled and some provision made to meet the recurring expenditure till the maturity and harvest of the paddy crop. Lacking an alternative occupation, the Malabar farmer has taken to the plough and he is faced with the problem of cultivation. The owner generally pays the land revenue and the tenant-farmer need only raise the crop and remit the rent after harvest. The minimum expenditure on cultivation when approximately analysed, has been found as follows :—

Average calculated from 27 holdings examined in Ernad Taluk, Malabar District.

Area under rice cultivated by one pair of cattle.	Expenditure.		Remarks.
	Item.	Percentage.	
	Cattle	33·3	
	Implements	4·2	
5·4 Acres	Seed	13 2	
	Cultivation expenses	49·3	
	Total	100·0	

These average figures are, of course, misleading because a few big-sized farms exist beside a greater number of smaller ones. As a matter of fact the holdings are much smaller than the average area under paddy as indicated above. If the members of the tenant cultivator's family do all work on the farm, "cultivation expenses" could be considerably reduced. But he must perforce buy his cattle, plough and seed, and to find funds for all this is his main problem.

Nature of Government help Loans are granted to the agriculturists under the Land Improvement Loans Act of 1883 and the Agriculturists' Loans Act, 1884, for the construction of wells and tanks, and for the purchase of seed, grains, work cattle, implements and other agricultural operations. Such help is rendered by the Government through its various departments noted below.

(a) *Revenue.* Distribution of loans to the agriculturist, to help him with his primary requisites such as cattle, seeds, etc., is mainly the work of the Revenue Department. The loans are given on landed or personal security. The tenant-farmer, who is in the main a simple-lease holder for one year, has neither of these to offer. He is not credit-worthy enough to take advantage of such loans.

(b) *Co-operative.* The prosperity of the small holder may lie in the direction of co-operative institutions, but before much good can be expected,

the masses should be better educated in the principles of co-operative effort and more "Raiffiesens" should spring up even in interior villages.

(c) *Industries.* Loans are distributed by the Industries Department for the purchase of oil engines and pumps, but they do not figure prominently in the Malabar tenant farmer's economy.

(d) *Agricultural.* The Department exists for the welfare of the ryots and for improving agriculture by scientific means. But the poor tenant in Malabar cannot derive the full benefits of such improvements unless the departmental help extends beyond mere advice. It does not help him effectively as it has no powers to grant loans for the purchase of cattle, and seed. Loans are, of course, sanctioned by the Agricultural Officers for the purchase of implements, but in Malabar, the small-holder finds himself more at home with his cheap and native tools, which have stood the test of time, rather than with the improved machinery. With many tenants, manuring is a matter of capacity or convenience and few are able to pay the necessary attention to the fertilizing of the paddy fields. Whatever manure is available from his stock is applied to his fields and sometimes supplemented by green leaves and green manuring. With the rice cultivator the Department has established a name and is popular for its pure seeds of strains. But as he looks to the Department for fresh supplies of seed instead of multiplying it on his own farm, he is necessarily disappointed since only a fraction of his needs can be satisfied at present. Thus with limited scope for work among the poor paddy cultivators, the Agricultural Demonstrator in Malabar is constrained to restrict his sphere of activity still further because he is bound by rules to adopt the only procedure of "cash and carry".

Public Opinion. The views and opinions freely expressed by the public could be brought under two categories: (1) the "ill-informed" and (2) the "informed".

(1) *Ill-informed opinion.* The educated section of the public who have generally no interest in land or its cultivation is often guilty of such opinions. Their complaints are not often based on facts and could have been set aside but for the thought that every one of these educated critics, by propagating incorrect views about the Department creates an atmosphere which is not conducive to 'bridge the gulf' that exists between research and the ryot. They should have correct information before levelling their criticisms for then alone will their criticisms have real value. Much of this ill-informed opinion could be corrected if the Director of Agriculture, supported by this House, presses on the Government and the Universities the need to include "The Activities and Achievements of the Government Research Departments" in the text book of our educational institutions. Propaganda and publicity should be intensified on more modern lines and greater information made available to the public regarding the different branches of Agricultural Education and Research.

(2) *Informed opinion.* This should be welcomed by the Department. The Agriculturist expresses such informed opinion with a closer knowledge

of his diffculties which are mostly of a pecuniary nature. And when he finds that its advice has no financial backing, not only the Department but also the whole of Agricultural Research falls low in his estimation. Difficulty in getting money to begin cultivation and delay or absence of effective help in times of need tend to prejudice the agriculturists against the Department. And the incidence of droughts, pests and diseases in crops, should they occur, only aggravates the tendency. Much of his criticism is real. But, in despair, he forgets the scope and limitations of the Agricultural Department. It has, however, yet to be empowered to give him more material help before it could effectively assume the natural role of existing for the 'Sons of the Soil'. The problem is difficult and many aspects will have to be studied, but it should not be an impossible task to find out an arrangement whereby the department is given the responsibility with power for improving the lot of the agriculturists.

An analysis of the situation calls for the following remedial measures.

Granting loans. To win him over and gain his complete confidence may land the Government in much capital investment, but the Agricultural Department could be immediately helped to appear in brighter light if whatever loans are at present distributed by the Government are done by the Agricultural Officers themselves, or through them.

Avoiding delays. There are inevitable delays in administration which the ryots cannot often understand. If he does not get in time his seed remedies or prescriptions for pests and diseases for which he expects spectacular results, he drags the whole Department into the mire without considering the inadequacy of the present staff to cope with the heavy work. But it will be worth while for the Department to simplify its procedure or dispense with certain formalities to cater better to the needs of the farmer.

Affording Irrigation facilities. It might appear strange that in Malabar, crops fail for lack of water. But as they are entirely dependent on rainfall, the cultivation can only be "a gamble with the rain." The contour of the country is irregular, the rainfall unevenly distributed. Difficient precipitation, especially in the months of October and November, reduce the outturn of paddy considerably. It is poor consolation then that the average annual rainfall for the tract is 118 inches, nearly $2\frac{1}{2}$ times the average for the province. The starting of many minor irrigation works requires investigation and the agricultural officer should take an effective part in initiating such schemes.

Faith in Research. What has been said so far is only to indicate some probable ways of restoring the ryots' confidence in the Agricultural Department. It has been assumed that the agricultural research workers themselves have infinite faith in research and in the potential utility of their methods, for, without faith in themselves and in the work they do, they cannot hope to persuade others to take them seriously. The research

workers should also realise their responsibility as joint investors with the agriculturists and the administrators in national progress. They should be ever mindful of the fact that the ultimate test of their labours is in the fields of the farmer; success there is their reward; failure, their incentive.

Conclusion. I shall close my paper with an appeal that this Conference now and in all its future deliberations, may discuss this subject in all its aspects and reflect the hopes and fears, the needs and necessities of the man behind the plough. It should evolve ways and means of bringing the ryot and the research worker nearer. It is my hope that the College Day and Conference of the Madras Agricultural Students' Union, will form the Central Observatory, where once a year rural observations and their bearing on the trials and triumphs of Research will be recorded.

Preliminary Observations on the Insect-free Storage of Grains.

By T. V. SUBRAMANIAM, B. A.,

Assistant Entomologist, Agricultural Research Institute, Coimbatore.

Introduction. The successful storage of his grains free from insects is a serious problem for the ryot. The grains have to be stored for some time, longer or shorter, before a ryot can dispose them off for food or for seed and during this period they are liable to be spoiled in various ways; their suitability for food may deteriorate or they may suffer in their germinating capacity; and insects contribute largely to this damage, the loss from which may amount to several lakhs of rupees in a year. It has been calculated that *cholam* (sorghum) grains alone are liable to damage upto 25 per cent during the course of storage for a year; in very bad cases it may be more. According to the Season and Crop Report for the year 1938—39 published by the Madras Government 1,265,300 tons of cholam were produced in this Presidency in that year, valued at Rs. 94,867,500. At a low estimate of 10 per cent the loss due to insects would come to 9½ millions of rupees. This loss has been calculated to be caused by only one species of insect – the rice weevil. If we take into consideration also other insects that take their toll, we can easily imagine, how great the loss caused to *cholam* grains in our presidency would be due to insects. Insects attacking grains are many; this paper deals with observations regarding only two of these, viz, the rice weevil on *cholam* and the paddy-borer beetle on paddy. The rice weevil, though commonly so called, is more a serious pest of *cholam* grains here than of paddy.

Methods of Storage of Grains in this Presidency. Paddy and *cholam* grains are stored in different ways in various parts of the presidency. (1) In some places they are stored openly in the pials of cattlesheds and dwelling houses, rarely covered over with a loose layer of straw; in many cases they are neither cleaned well nor dried before they are stored, so that the facilities for insect infestation are plenty; such simple methods of

storage are common in parts of Trichinopoly and Pudukotah. (2) In parts of Malabar, Pudukotah and Trichinopoly, grains are stored in closed earthen masonry or wooden granaries inside houses after they are well dried in the sun. These granaries do not generally admit of the entrance of insect pests and being more or less air-tight they afford facilities for the fumigation of the grains if and when they get infested. Some of the wooden granaries in Pudukotah are ideal in this respect because they are divided into a number of independent compartments, well raised from the ground and provided with trap doors at the bottom through which the grains can be removed. (3) In the Trichinopoly District, Madura and parts of Coimbatore there is a system of storing grains in open rooms in houses after the grains are well dried in the sun; this system gives free scope for the entry of insects. In some cases the ryots put leaves of Pungam (*Pongamia glabra*) or Neem (*Azideracta indica*) over the grains in the belief that these prevent insect attack. (4) In certain parts of Coimbatore *cholam* is stored in underground pits inside houses or in the open in the yard or on the roadside. There are two kinds of underground pits. One consists of large masonry cellars 8—10 feet square at the base and 15—20 feet deep with a small rectangular opening about 2 feet square at the top covered over by wooden planks or stone slabs and plastered over flush to the ground level with clay. This type keeps the grains free from insects and grains stored in this manner for over two years have been found to be absolutely free from insects. The other type consists of round pits of uniform diameter dug in the ground: they are generally smaller than the previous type, being only 5 or 6 feet deep and 2—3 feet in diameter; these pits are lined on all the sides top and the bottom, by cholam stubble and old gunny bags, evidently to prevent the grains from coming in contact with the earth. Any space left over the level of grains is filled with earth and every time the grains are removed from these pits, more earth is put in to fill the pit completely leaving no empty space above the grains. This system of storage does not seem to have any value in preventing insect attack as grains stored like this for over 6 months were found badly infested with beetles. The grains stored in both these kinds of pits are said to lose their germinating capacity completely and therefore, they are useful only for food. Moreover, this kind of storage is said to be suitable only for *cholam*. During the storage much heat is produced inside the pit and the air trapped inside becomes suffocating so that grains from these pits could be removed only 12 hours or more after the pit is opened. (5) In the east coast districts grains are stored in round granaries known as *Kudirs* erected inside or outside houses; in the latter case they are provided with thatched roofs. The sides are made of twisted straw plastered over with clay. Some of them are made of several circular rings of straw piled one over the other and plastered together. They have an opening at the top which is closed and plastered with mud after the grains have been put in. Some of these are provided with a hole at the bottom which is kept plugged and through which the grain can be drawn out. Being practically air-tight these are expected to be insect-proof;

but they do not appear to be so in fact. Many of these were found to harbour insects which infested the grains stored in them. (6) In the Ceded Districts, South Kanara, Northern Circars and other places grains are stored in *Mooras, Mudikattus* or *Puries* which are only packages made of twisted straw and sometimes plastered over with mud. (7) Storing grains in big bamboo baskets smeared with cowdung on the outside is common in certain parts of Malabar. The prevention of insect infestation is very remote in this case. (8) Mud pots with their mouth covered and the covering plastered over with mud and tins with tight-fitting lids are commonly used for storing grains especially where the quantity is small; in these cases, of course, insect infestation is prevented to some extent. (9) A common method of storage of grains is in gunny bags in go-downs and here insects usually have free access to the grain.

These are some of the common methods of storage of grains obtaining in this presidency. It will be seen that our ryots do not seem to have attempted much in the direction of prevention of insect infestation in the grains except in such cases where a few leaves of *neem* or *pungam* were scattered over the stored loose grains with the idea of keeping off insects. It is interesting to note that in certain localities the presence of the paddy moth in the grains in storage is considered to be auspicious as it is believed that such granaries would not get empty.

The Problem of Storage. The problem of storage of grains can be approached in two ways : either by preventing the entry of insects that may be in the grains before they are taken into the granary or by tackling the insects in the store ; of course the former is easier and more efficient. Some of the insects that attack grains in the store start their activity when the grains are in the field and are carried into the granary along with the harvested grains. These can be prevented from entering the granary by thoroughly drying the grains in the sun and cleaning them well before storage or by fumigating the grains, i. e., subjecting the grains held in air-tight chambers to the action of certain poisonous gases. In either case the insects in the grains are killed to a great extent. Fumigation is a laborious process requiring great care and technical skill, entailing the use of extremely poisonous and often inflammable material ; moreover, it requires special facilities for making the granary airtight, so that under the existing conditions in the average Indian village, it will not be possible for the ryot to undertake it. He has, therefore, only one alternative viz. to prevent insect entry and that is thorough cleaning and drying of the grains before storage. This will also be useful in keeping down the number of insects in the store as many species are unable to thrive in whole and dry grains while others require a certain amount of moisture in the grains for completing their life cycle. The weevil is indifferent to oxygen supply so that airtight storage does not prevent the insect from normal development. According to Dr. Cole " A non-ventilated atmosphere at about 80°F charged with water vapour (no matter how poor in oxygen and contaminated with carbon-di-oxide)

provides most favourable conditions for the life and reproduction of the weevil."

Insects can also be checked from multiplying in the store or even from entering the store by mixing with the grains substances distasteful to them. Some work is being done with this end in view. Experiments were conducted to test the efficacy of various substances which suggested themselves as possible protective agents against insect damage to stored grain. As far as possible only those materials that are used by the ryot or are easily available to him or have a reputation for keeping off insects were selected. Paddy and cholam grains were stored in gunny bags, as is generally done by the ryots and kept in the central farm stores allowing free access to insects. The following treatments were under trial :— (a) Leaves of *Pungam* (*Pongamia glabra*), *Tulsi* (*Ocimum sanctum*), and *Neem* (*Azidaracta indica*) dried in the shade and mixed with the grains before storage at the rate of 5 pounds per bag ; (b) Powdered Acorus (Tamil-*Vasambu*), Derris, Pyrethrum, and lime to which a small quantity of creosote has been added, mixed with the grains at the rate of 2 pounds per bag ; (c) Jeypore talc powder — a cheap substance which the manufacturers claim to be very effective in protecting grains from insects (as much as would be necessary for a thorough coating ; it took $2\frac{1}{2}$ pounds for a bag of grain) ; (d) a thorough drying of the grains in the sun for a day once a month. One bag of grain was kept as a control without any treatment. Every month one Madras measure of the grains was taken at random from each bag and counts of the population of the insects— rice weevil (*Calandra oryzoiae*) in cholam and paddy borer beetle (*Rhizopertha dominica*) in paddy were taken.

Loss of weight of grain and number of beetles collected in each lot of 200 lbs. in one year.

Treatments.	Cholam.		Paddy.	
	Loss in weight.	No. of calandra beetles.	Loss in weight.	No. of calandra beetles.
1. Control	43·2 lbs.	66135	12 lb.	10717
2. Monthly drying	23·8 ,,	11048	11·6 ,,	2400
3. *Pungam*	36·6 ,,	36580	14 ,,	7086
4. Derris	35 6 ,,	53861	11·6 ,,	2077
5. Paracide	30·4 ,,	34404	10·8 ,,	5758
6. *Tulsi*	46·8 ,,	41508	31·2 ,,	7841
7. Acorus	21·2 ,,	48792	8 ,,	2287
8. Lime and creosote	16·2 ,,	39904	8 ,,	4170
9. Talc powder	164 2 ,,	32970	13 2 ,,	13221
10. Pyrethrum	65 ,,	39901	9·2 ,,	8151
11. *Neem*	44·4 ,,	56990	34·8 ,,	7870

The above table which depicts the results of one year of experiments shows that in general *cholam* suffers more from damage by insects than paddy and that in the case of *cholam* and paddy periodical drying of the grains once a month keeps the insect population very low, that *pungam* and *neem* leaves generally used by the ryots do not give as much protection as is

claimed for them and talc powder has totally failed to give any protection at all—as a matter of fact the number of insects and the percentage of damage in this lot was the highest; the substance seems to have a further disadvantage of damaging the gunny bags in which the grains are stored; the gunny bags had to be renewed more than once during the course of the experiment. Acorus powder and lime with creosote have given very encouraging results. These and other methods of storage are being tried again for another year.

Co-operation in Agriculture with special reference to sugarcane crop in Coimbatore District.*

By P. V. KRISHNA AYYAR, M. A.

Deputy Registrar of Co-operative Societies.

That Agriculture is the mainstay of the vast majority of the population in this country and that the prosperity of the country depends on the condition of agriculture and those engaged in it, are obvious facts which do not call for elaborate arguments to convince anyone. In a world of large scale business, the agriculturists are in need of organisation, and co-operation offers the most ideal form of organisation for them. Co-peration has worked wonders for agriculturists in countries like Denmark, Ireland, Canada and the United States. In India, till recently, co-operation among agriculturists confined itself to one aspect of the problem namely credit. Such a one-sided development had consequences which made themselves felt seriously in the great Depression which set in from 1930. Now it is recognised on all hands, that the rural problem, if it is to be tackled properly, should be tackled on all its fronts. Any attempt to improve the economic condition of the agriculturists must therefore include in its scope finance for production purposes, supply of requirements and marketing of produce.

On account of the circumstances of its origin and early history, the co-operative movement is still largely a credit movement but the lesson taught by the depression referred to above has had its effect and societies other than credit are being started in large numbers. Taking the position in the districts of Coimbatore and Nilgiris, there were on 30th June 1940, 725 societies in the former and 96 in the latter. Of these 586 and 72 respectively are credit societies while the rest are for other purposes.

The following classification is intended to give an idea of the nature of work done by the different types of existing societies.

No of societies classified.	Coimbatore district.	Nilgiris district.
1. Land Mortgage Bank	11	1
2. Central Bank	1	—
3.. Supervising Unions	16	2
4. Audit Union	1	—
5. Language Federation	1	—

* Paper read at the Twenty-fifth College Day and Conference of the Madras Agricultural Students' Union, July 40.

6.	Loan and sale and Marketing societies	6	1
7.	Building societies	13	2
8.	Stores—general	4	5
9.	do. for mill hands	9	—
10.	Students stores	6	2
11.	Urban Banks and other limited liability credit societies other than salary earners	17	4
12.	do. do. for salary earners	14	6
13.	Agricultural Primary Credit societies.	586	72
14.	Miscellaneous	40	1
	Total.	725	96

The best results have been achieved only by societies in the working of which both the Co-operative and Agricultural departments took joint interest. The aim of both the departments being the same, viz, increasing the income of the agriculturists, coordination of their activities is absolutely necessary and that such coordination yields the maximum results, has been proved by the limited experience gained so far. The Co-operative Societies gain immensely by making use of the results of years of patient research and labour put forth by the Agricultural department and that department has in the co-operative societies an organisation that enables it to propagate the results of its studies to a larger clientele in much quicker time and in a more efficient manner An outstanding instance of such success is the Tiruppur Cotton Sale Society. What it has done for cotton, similar organisations are trying to do for potatoes in the Nilgiri hills and for groundnut, turmeric and sugarcane in Coimbatore district. The seed distribution schemes for potatoes and groundnut which the Agricultural department have taken on hand are sure to be of great help to the societies.

Taking sugarcane, one of the most important money crops, and in the improvement of which Rao Bahadur T. S. Venkataraman, the Sugarcane Expert, has achieved striking results, it is admitted on all hands that, on account of fluctuations in the price of jaggery, the sugarcane grower is often in a precarious position. From the year 1937 with the help of Government of India grants, attempts have been made in all sugarcane growing areas in the presidency to organise the growers on co-operative lines and to secure for them a greater yield and a better price for the yields. The Government of India has set apart a portion of the excise duty levied on sugar for distribution among provinces where white sugar is produced for purposes of assisting of the organisation and operation of co-operative societies among sugarcane growers so as to help them in securing fair prices and for other purposes directed to the same end. The Madras scheme covers a period of 5 years from the date of adoption and it is administered by the Registrar of Co-operative Societies, Madras, who will spend the grant through co-operative societies or unions of co-operative societies of sugarcane growers in factory areas. The Director of Agriculture will give the necessary technical advice to stimulate the cultivation of sugarcane. The scheme is meant

to help the unions and societies to do their work efficiently with the help of the Demonstrators and Inspectors of the Co-operative Department.

The objects of the Societies and the Unions are—

(1) to introduce and grow varieties of cane best suited to the locality and factory;

(2) to introduce early and late maturing varieties to feed the factory and to enable it to crush cane for as long a period as possible.

(3) to maintain a supply of vigorous seed material by adopting "short crop" method in different varieties found suitable to the locality.

(4) to adopt measures to protect the cane crop from insect pests and diseases.

(5) to take such measures as are recommended for improvement in the methods and for reduction in the cost of cultivation such as interculturing, manuring and irrigation.

(6) to concert measures to improve means of transporting canes to factories.

(7) to give facilities for the ryots to check weighment of cane at the factory and avoid delay in the disposal of cane etc.

and (8) to take measures to finance cane growers through co-operative societies at the right time for the purchase of seed, manure, etc. and for harvesting the crop.

In the Coimbatore Sugarcane Growers' Co-operative Union, Ltd. formed and registered under Madras Co-operative Societies Act VI of 1932, there is an organisation to help the cultivation of sugarcane. The Union has started work in January 1936. The Government have been pleased to place the services of an Agricultural Demonstrator and a Maistry, besides a subsidy of Rs. 1,000 towards purchase of implements, sugarcane setts and manure. So far 252 members have joined the union and subscribed Rs. 8,890 by way of share capital. The Union has introduced high yielding varieties of sugarcane namely Co. 413, Co. 419 and Co. 421 recommended by the Agricultural Department. It purchased 40,000 setts of Co. 419 and Co. 421 from the Tudiyalur village and supplied them to members in Thoppampatti and Jangamanaickenpalayam villages. The Union had also supplied to the members suitable manures worth about Rs. 6,000. It has financed the members to the extent of Rs. 22,434 for meeting their cultivation expenses. Ploughs, cultivators, bund-formers and other implements have been purchased by the union from the Government subsidy of Rs. 1,000 and were placed at the disposal of the members of whom as many as 50 have utilised them to their best advantage.

With the introduction by the Agricultural Department of high yielding varieties of canes like Co. 419 and Co. 421 and using proper manure, there has been a marked increase in the average yield per acre followed by an extensive cultivation of sugarcane crop especially within the last 3 years. The area under sugarcane cultivation has almost doubled, resulting in over-production. This and other reasons have led to a fall in the price of

jaggery. The average yield of jaggery has also increased from 30 to 35 pothies (one *pothy* = 280 lb.) per acre. There has not been a corresponding demand for it. Even the little export from Coimbatore of lump jaggery to Bombay, Sholapur, Hyderabad and Calcutta has decreased of late. By selling jaggery at Rs. 6 per *pothy*, barring incidental expenses, the ryot can, hope to get only a margin of Rs. 3 per *pothy*. If the cultivation is extended the cane cultivator stands to lose heavily.

By way of a complement to the activities of the Sugarcane Growers' Union, with a view to give a greater income to its members and other sugarcane growers it is proposed to organise a sugar factory on co-operative basis, to convert the surplus sugarcane into white sugar. Fifty per cent of the canes grown in this district will be consumed at the factory for conversion into sugar.

Calculated on a modest basis, the ryots will get an extra return of about Rs. 6 lakhs every year even if the price of sugar goes down to Rs. 27—8—0 per bag of 2 cwts. It will be gratifying to note that this will also yield to the Central Government an excise duty of about 6 lakhs.

The necessary finance for running a sugar factory on a large scale has to be raised by way of share capital and loans from the Coimbatore District Urban Bank. The Coimbatore Sugarcane Growers' Co-operative Union has enthusiastically come forward to work up the scheme proposed. The proposal for the establishment of a Co-operative sugar factory in which the cane growers will be enrolled as members, was taken up at a meeting of the Board of Directors of the Union and important cane growers. The Registrar of Co-operative Societies, Madras, The President of the District Urban Bank and the Deputy Registrar of Co-operative Societies were present at the meeting. The proposal of establishing a sugar factory was discussed in full and the following decisions were arrived at.

(1) That a Co-operative sugar factory consisting of cane growers should be started.

(2) That ryots should take up 3000 shares of Rs. 250 each.

(3) The share amount may be paid in full in cash. In the alternative a share holder may pay Rs. 100 in cash, furnishing a security of unencumbered immovable property for the balance of Rs. 150.

(4) that every ryot should undertake to cultivate and supply to the factory for each share held by him, canes grown over an acre of land for being crushed in the factory.

(5) When 1500 shares have been subscribed for, by the ryots, a separate society will be registered to run the factory. So far 850 shares have been subscribed and earnest attempts are being made to reach the goal.

The starting of this sugar factory will be the signal for launching other schemes to help sugar-cane growers in other areas. It is under contemplation to start co-operative societies for sugarcane growers at Unjalur and Udumalpet to ensure steady supply of canes to the factory from the feeder

societies. The issue of loans on produce, and the marketing thereof will be left with the Sugarcane Growers' Union, to which these societies will be affiliated in due course.

The necessary finance for the enterprise is to be derived from the shareholders and the financing bank, but the co-operation of the Department of Agriculture and Industries are essential for launching the scheme and working it successfully. Sugar factories in S. India are few in number and those, excepting one, are joint stock concerns. The example of the Vuyyur Co-operative factory has demonstrated the possibilities of a Co-operative factory even under difficult circumstances: With much more favourable conditions, a co-operative sugar factory in Coimbatore is bound to thrive well.

ABSTRACTS

The application of genetics to plant breeding. J. B. Hutchinson *Jou. Gen.* 40. 271.

There can be no response to selection unless the material is genetically variable. The relation of variability to rate of change under selection and the effect of selection in reducing variability are therefore fundamental factors in breeding theory. The examination of unselected crop populations has provided information on the equilibrium between selection and variability that is established in nature and it appears that variability persists at a high level. It follows that natural selection does not naturally result in uniformity and the stability of such mixtures must be due to selection and not to genetic uniformity.

The records of breeding projects with sea Island cotton show that it is in practice impossible to achieve genetic uniformity, even when it is deliberately sought. Variance may be greatly reduced, but it persists in some measure even in the most closely bred strains. If the stability of unselected populations is due to selection and not to genetic uniformity the breeder may regard purity as a secondary consideration. and a new approach to his problem is possible.

The problems involved in the choice of material for selection have been better studied than most others that face the breeder. For most crops the areas of high variability are known. Now that it is recognised that hybridisation is only a means of increasing variability and is a preliminary to selection and not a substitute for it, breeding programmes are better planned No one nowadays wastes his time creating variability when it exists in his neighbour's fields. Where hybridisation is necessary genetic investigations have marked off the dangerous areas where cytological abnormalities and inter-specific breakdown require special treatment. and in some cases, as in cotton sound guidance can be given and the order of its magnitude likely to be found in hybrids of any given type.

Studies of the rate and magnitude of change that can be induced by selection have an obvious bearing on breeding policy, but little information is available beyond Students' analysis of Winter's selection experiments, Harland's account of the Mount Serrat Sea Island cotton and Hutchinson and Kubersingh's analysis of the effect of selection on Malvi cotton A preliminary enquiry into another aspect of the problem of the mass action of genes is Anderson's recent culculation of the limiting effect of linkage on gene assortment in distant hybrids. This has an interesting bearing on the rate of re-establishment of the species balance in Harlands' back crossing method of exploiting interspecific hybrids. S. V. P.

Genes: Atoms of Heredity B. P. Pal. *Indian Farming* 1:6. The degree to which individuals resemble their parents is spoken of as "heredity" and the degree to which they differ is said to be due to variation in this heredity. How these resemblances are perpetuated from parent to progeny and how new differeces arise are the subject matter of the comparatively recent science of genetics.

Within the nucleus there are a number of more or less rod shaped bodies called chromosomes. The number of chromosomes is the same in every nucleus of any one plant or animal and is also constant for each race or species. Thus tomato has 24 gram 16 and man 48 chromosomes.

Furthermore, in these cases the chromosome complement is composed of two similar sets, each chromosome being represented twice in each cell. The chromosomes contain a large number of living particles known as the genes which control the development of all the inherited characters of an organism.

Unlike the division of the nucleus in the body cells where each chromosome divides longitudinally and gives rise to daughter cells with the same number of chromosomes as the parent cell, the nucleus undergoes a different division, in the reproductive cells. In these special cells, the similar chromosomes come together in pairs and separate out to daughter cells without undergoing a longitudinal division, so that after each division each cell contains only half the number of chromosomes as the parent cell. In the act of fertilization the original double number of chromosomes is restored and further divisions of fertilised egg results in cells containing the original double number of chromosomes.

Life is perpetuated by the passage of living material from parent to offspring and this living material is the nucleus with its chromosomes carrying the genes which are the units of heredity.

The genes are extraordinarily stable and pass from one generation to another unchanged. Occasionally, however, changes do occur in individual genes producing visible effects on the organisms. These changes are called "mutations" and are perpetuated in succeeding generations.

Instead of two sets of chromosomes usually present in any organism of a species, three or more sets are sometimes present. This condition known as "polyploids" is daily common in nature, The polyploids in nature are usually giants adapted to many adverse conditions of growth.

In some instances all the chromosomes of a set are not duplicated but only one or more are present as extras. This kind of change which occurs in nature is termed 'heteroploidy" and may be responsible for evolutionary changes.

Mutations, polyploidy, and heteroploidy are being artificially speeded up by applications of X-rays, temperature and chemicals to plants with a view to getting germinal variations which may eventually prove of economic value.

It has been recently discovered in America that a substance "colchicine" when applied in weak solutions to growing plant cells produces polyploids.

EXTRACTS

Pyrethrum cultivation in Kashmir. Pyrethrum constitutes a genus of Chrysanthemum in Compositae family and is said to constitute a hundred species, out of which some are toxic to insects. The principal species, commercially important is *Pyrethrum cinerariaefolium.* The plant ordinarily resembles the field daisy, particularly the flower which is apparently similar to the daisy, in size, shape and colour. The plant is perennial and grows 18 to 20 inches high.

The dried crushed flowers have a pleasant, characteristic odour due to the presence of essential oil which is pronounced in the freshly prepared material. It has acrid, bitter taste and causes numbing sensation to the tongue and lips which is due to the active principle present in the plant. The active principle is called pyrethrin, which is said to exist in two forms. Both these forms are mineral oil soluble.

The use of pyrethrum flowers in powdered forms and its extraction is known since earlier days. At present very large quantities of the flowers are utilised in U. S. A. and other occidental countries.

The plant is cultivated on a commercial scale in Dalmatia (Yugoslavia), Japan, Kenya, some parts of Italy, United Kingdom and Russia. Japan and Kenya are the two principal producing countries.

Since last several years the use of this insecticide has been found practicable as a control against mosquitoes The adults readily succumb when the pyrethrum extract is sprayed on them, as is evident by the so-called commercial "Flit". Flit is mineral oil extract of pyrethrum.

India has been importing flowers from Kenya in considerable quantities.

The Imperial Council of Agricultural Research having recognised the possibilities of its local demand, took necessary steps for the introduction of pyrethrum cultivation in India. Seeds in small quantities were imported and distributed to various provinces and the constituent States in the year 1937.

The Department of Agriculture (Kashmir) started its cultivation under the auspices of the Imperial Council of Agricultural Research. This is the third year of the plantation. From the present harvest which has been just completed we have more than half a maund of seed, besides some quantity of dried flowers for experimentation. The last two years' experiments have shown:—

1. Seeds sown in well-prepared nursery beds in spring, early summer and autumn germinated well, although the early summer percentage was 50 per cent., less than that of spring and autumn.

2. From 1 lb. of seed we obtained about 15,000 seedlings.

3. The seedlings were transplanted after 4 or 5 weeks one and a half foot apart either way. Seedlings can be planted both in spring and autumn.

4. Very little irrigation is needed. In fact too much irrigation or plenty of rain damages the plant.

5. The crop could be multiplied by subdividing the one year or two year old plants and the area as such could easily be multiplied 4 to 6 times.

6. The flowers are ready for harvesting in the beginning of June. The flowers ripen for seed production sometime in the middle of July.

7. In the first year of plantation, very few flower heads are produced. second and third year gives increased yields. In the second year we obtained as much as 300lb of flowers per acre and some of the individual bushes did yield 500 flower heads.

8. The flowers were sent for trial purposes to the Malarial Institute of India, which has found the specimen equivalent to the Kenya ones in biological test. It is said to have contained about 1 per cent pyrethrin.

9. The vitality of the seed has not been affected by storage for one complete year so far.

Other cultural experiments including manuring under irrigated and unirrigated conditions in different classes of soils have been started at about a dozen centres. It is expected that the cultivation of pyrethrum will be started on a very large scale during the coming season.

The Forest Department had taken up the cultivation earlier and this year they had brought an area of about 200 acres under this crop.

Small samples of five other varieties namely *P. roseum*, P *parihenium*. *P. cine raria*, *P. carneum*. *P. lencopiloides* have also been received from the Imperial Council of Agricultural Research. Out of these only two i. e., *P. roseum* and *P. parthenium* succeeded well. As a plant, none of these can compare well with *P. cinerarioefolium* Samples of flowers are collected and will be sent for biological test. (Pyrethrum cultivation in Kashmir by M. R. Fotidar. *Current Science*, 9: No. 8, August 1940. pp. 360 361) R. R.)

Timber Protection—New Swedish method.

Many attempts have been made to find suitable means of protecting timber against rot and insects Painting is, of course, the most common but, being only a surface preparation, it does not prevent the body of the timber from taking up moisture, and therefore rot gradually appears even in painted wood. The effective components of a new Swedish impregnation method are certain arsenic compounds. The method has been developed by the Boliden Mining Company, in Stockholm, which obtains large quantities of arsenic as a by-product in the smelting of copper ore from its mines in northern Sweden. The impregnation liquid used consists of a solution of various salts, including arsenic. After these salts have entered the timber, a chemical process takes place, with the co-operation of certain easily oxidized substances in the wood itself. The final result of this chemical process is the production of zinc arsenate and chromic arsenate, which become inseparably fixed in the wood, and constitute the effective elements against attacks of decay or insects Arsenic-impregnated timber is said to retain its mechanical qualities. It takes on a soft green color with a slight shade of brown, which is sufficiently strong to render painting unnecessary if the timber is used in buildings. Another advantage is that the timber does not catch fire as easily and burns less quickly than unimpregnated boards, thus contributing to damage reduction in case of fire. The new method is said to compare very favourably in cost with other methods. In the Scandinavian countries, arsenic-impregnated timber at present is being used increasingly for various kinds of out-door purposes, including quay and other under-water constructions. Twelve impregnation plants in various parts of Sweden are employing the method, in addition to some in Norway and Denmark. (*Sci. Amer*: 163: (1940): 210—211).

Foods—their Value.

Foodstuff.		*Work.*	*Sources.*
1. *Protein.*	(a)	to build and repair all tissues.	Meat, fish, eggs, milk, cheese, cereals, pulses, nuts.
	(b)	to give heat and energy. (of secondary importance as it is an expensive source)	
2. *Carbohydrates.* (starches and sugars)		to give heat and energy.	Sugar, fruit, honey, milk, cereals, pulses, vegetables.
3. *Fat.*	(a)	to give heat and energy.	Cream, butter, fat of meat, milk cheese.
	(b)	to protect delicate organs.	Eggs, vegetable oils, cereals, nuts.
4. *Mineral salts.*	(a)	to make bones and teeth.	Milk, green vegetables, fruit, eggs, cheese, fish.

		(b) to keep blood in good condition.	
		(c) to aid growth.	
5.	*Water.*	(a) to keep temperature even.	Water, milk, fruit, vegetables, beverages, etc.
		(b) to remove waste matter.	
		(c) to make the body fluids.	
		(d) to dissolve and carry food to all parts.	
6.	*Vitamins.*	(a) to help growth.	Vegetables, fruit, liver.
		(b) to maintain health.	Milk, animal fats.
		(c) to prevent or cure certain diseases.	Eggs, cereals, and most common foods, particularly uncooked fruits and salads.
7.	*Roughage.*	(a) to prevent constipation.	Fibrous parts of fruit and vegetables, cereals.
		(b) to regulate the bowels.	

N. B.—The sources are placed as much as possible in order of importance.

Kind of diet.	*Result.*
1. Inadequate in quantity, otherwise satisfactory.	Malnutrition.
2. Over adequate.	Obesity and may result in certain diseases developing owing to organs overworking.
3. Adequate as regards heat producing substance but deficient in certain essential constituents. (Cheap diet of too much starch).	War or nutritional oedema or certain deficiency diseases from lack of minerals and vitamins.
4. All constituents present but badly balanced.	Too much fat habitually produces kelosis and acidosis Too much calcium upsets absorption of phosphorus.
5. Unsuitable with regard to too little or too much roughage.	Indigestion, constipation or diarrhoea may develop.
6. Food contains poisonous substances through contamination.	Definite poison symptoms.
7. Certain agents lacking.	(a) Determines resistance or response to disease (particularly in children e. g. dental decay, rickets). (b) Pernicious anaemia and numerous other diseases.
8. Diet sometimes satisfactory for ordinary individual, but quite unsuitable for the exception.	Certain people cannot eat straw berries, apricots, etc.
9. Dietary deficiencies.	These link up with endocrine disorders e. g. goitre.

(*The Rhodesia Agricultural Journal*, page 581, Oct. '40.)

Fire Proofing of Thatch.

A. J. Taylor, of the College of Agriculture, Cedara, in the Union Weekly Press Service, gives the following hints for the fire-proofing of thatch:—

One of the drawbacks of thatch in farm buildings is the risk of fire. This danger can be largely eliminated, however, if the thatch is treated before use with a suitable protective material.

Ordinary alum is one of the best and cheapest of such chemicals, whilst ammonium phosphate, sometimes applied as a fertiliser, can also be used.

The bundles of thatch grass should be loosened and then well soaked in a solution of alum, about 4 to 8 ozs. per gallon of water. When thoroughly saturated, they should be removed from the solution and the surplus liquid allowed to drain back into the tank or vessel used for treating the thatch. Standing the loosened bundles on end on a sheet of corrugated iron leading into the tank will ensure good drainage and so save any surplus alum solution. The bundles should then be spread out to dry, standing them on end against a wall or suitable rack so as to ensure a good circulation of air around and through them. It is important that the thatch be thoroughly dry before it is put on the roof. Damp thatching material employed in constructing a roof is very liable to become mouldy and to rot.

The thatch grass should be treated with the alum before it is used. It is less satisfactory to spray a thatch roof already built, since the grass does not become properly impregnated with alum, especially the inner layers to which the solution does not penetrate.

Thatch thus treated will be found to smoulder but not to burn freely. The alum which coats the grass fuses and so forms a protective glaze on the thatch which prevents access of air to the material and so makes it difficult to ignite. Sparks falling on such treated thatch will not set it alight.

The use of alum has a further advantage in that it makes the thatch less liable to harbour insects. [*The Rhodesia Agricultural Journal* p. 607, Oct '40]

Gleanings.

Preservation of vegetables by waxing. It has long been known that a film of natural or artificial wax on the surface of plant tissue is effective in reducing its rate of waterloss and commercial processes have been developed particularly in the citrus industry, which take advantage of this fact. More than 75 per cent of the oranges grown in California and Florida are now being treated in this way. The possibility of extending the process to include vegetables which have to be stored for some time before sale, is now being investigated and useful results are described by H. Plantenius (Cornell Univ. Agric. Expt. stn. N. York, Bull. 723) The method which appears to be the most promising is the dipping process, which can be carried out by hand or mechancial equipment. The vegetables are first washed, and without drying are dipped momentarily into a cold wax emulsion at room temperature and then dried thoroughly, the average thickness of the resulting dry film varying from one to two microns. The chemical nature of these emulsions is very simple. Essentially they consist of colloidal suspensions of one or several kinds of waxes in water, the minute particles being kept in the disperse phase by means of a soap. One of the waxes used contained benzonitres in addition to paraffin and soap. Proprietary articles were used in their experiments, and their names, together with those of their manufacturers and partial compositions, are given. A large variety of veget ables were tested. The result, obtained with topped carrots and cucumbers were outstandingly good, and in general can be recommended for all root crops with the exception of parsnip. The waxing of leafy vegetables is not advised, nor for those which are shipped with ice on top of the container. Waxing does not improve the quality of an inferior product, nor does it prevent the progress of disease but it does reduce shrinking and maintain the fruit or vegetable in a fresh condition for a longer period than would be possible without treatment.

Synthetic Rubber. The newest of the synthetic rubbers, Chemigum, has just been announced by Goodyear as a result of several years' research. A new plant having an initial capacity of 10,000 pounds per day is being installed at Akron. Chemigum is derived from petroleum through a cracking process, and tyres made of it are said to give superior performance to those made of German Buna. In fact, the manufacturer claims that such tyres are equal to those of natural rubber. Like other artificial rubber, however, Chemigum at present costs more than natural crude rubber. Nevertheless, its increased tensile strength; resistance to ageing, abrasion, and oils, and the fact that it may be processed more easily than Buna, make it important industrially. It also has possibilities for blending with natural rubber, so that it might help in an emergency to eke out slender supplies of the natural product. (*Sci. Amer.* 163: (1940) 218-219)

Sulphur dioxide tablets. The National Fruit Research Station in England has perfected a method for the preparation of exact quantities of sulphur dioxide in tablet form. These sulphur dioxide tablets, when dissolved in water, form a solution in which fruit as picked or purchased from shops will keep indefinitely.

The British Ministry of Agriculture, as a war-time measure has appealed to the public to preserve as much fruit as possible. It is stated that the sulphur dioxide tablets are already available and that six pence worth will preserve 20 lb. of fruit. Manufacturers are to use the commercial sulphur dioxide process to preserve surpluses, which will be released as required for jam-making.

Agricultural Fottings.

Early varieties of Ragi and the performance of strain E. C. 3517.

To shorten the duration of a crop with an increase in yield will mean a double benefit to the ryot.

For some years, E. C. 593 has been the departmental strain of ragi which has stood the test, maintaining a high standard of yield, but the strain takes a slightly longer time to mature. In the trials with the early varieties of ragi, the Millets Specialist, has brought out a promising strain, labelled as E. C. 3517. This was tried at the Millets Breeding Station in six series of yield trials both in the early and late season along with strains about 110 days in duration during the past three years. An average increase of about 24% in yield was secured by this strain. In comparing it with E. C. 593, it gave as much yield as E. C. 593 even though E. C. 3517 is ten days earlier in duration. This would mean saving of irrigation charges to that extent. In district trials it has proved superior to local varieties of similar duration in Coimbatore, Karur, Musiri, Kalahasti, Arkonam, Conjeevaram, Chingleput and Saidapet Taluks. The increase in yield in all these cases varied from 11% to as much as 35%.

It must however be borne in mind that evolution of a good strain does not end the problem there. The highest response a good strain gives to the best treatment afforded to it is the test of its popularity. This statement has been amply proved by the performance of this strain on the Central Farm, Coimbatore, during the ragi season this year. Transplanted at the proper time, in a well prepared soil and favoured with irrigations at the proper stages, the crop showed vigorous growth. The ultimate yield from an area of 1·24 acres broke all records for ragi on the Central Farm, giving a rare yield of 4,075 lb. grain per acre. The highest yield obtained so far on the Central Farm was 3,660 lb. of grain from E. C. 593 in 1934—1935 and this year E. C. 593 has raised its own record to 3,734 lb. From the figures recorded outside the Central Farm, 3,882 lb. is the highest figure noticed and this is from Gudiyattam.

E. C. 3517 is a selection from *Mutti Ragi* of Udamalpet taken at the Millets Breeding Station in 1935. The plants are unpigmented and have fist-like earheads. This shape of earhead is liked by the ryots.

(From the Director of Agriculture.)

Provincial Marketing Board. The second meeting of the Provincial Marketing Board was held on the 19th November 1940. The Director of Agriculture (Chairman), the Director of Industries and Commerce, the Registrar of Co-operative Societies, Diwan Bahadur M. Balasundaram Naidu, C. I. E., Rao Sahib G. Rajagopala Pillai, Rao Sahib V. Krishna Menon, Messrs. Vellingiri Gounder, Guduthur Thimmappa, and the Provincial Marketing Officer (Secretary) were present. Mr. T. A. Ramalingam Chettiar attended by special invitation to discuss the present position of the Provincial Marketing Society, Madras.

There were 14 subjects on the agenda. Among the important subjects discussed at the meeting may be mentioned the organization of paddy and rice marketing in the Presidency; the expansion of the oil crushing industry in groundnut; the present position of grading of agricultural commodities and the standardization of weights for rice and paddy in local and export trade. A proposal to publish a co-operative Directory and a proposal to enlarge the weekly price list now published by the Direcor of Industries and Commerce was also discussed. Four subjects were adjourned for the next meeting.

The Board resolved to advise Government that immediate steps be taken to start oil crushing factories in a few important production or market centres with Government assistance, if necessary. It recommended that transactions in rice and paddy marketing should be by weight only and that packages (gunny bags) in the export trade should be standardized. It was suggested that research should be done on the qualitative demand of the various rice consuming centres to ascertain how much demand can be met by adjusting production in adjacent rice producing areas. It was decided to expand grading of commodities under Agmark on a wider front. Grading in the Madras Presidency has now reached a total of over 13½ lakhs of rupees worth of produce handled, the bulk of the produce handled being rice in Nellore and Tanjore Districts and fruits (oranges and mangoes) from Koduru and Chittoor respectively. New grading stations were approved for rice, mangoes, oranges, plantains, grapes, jaggery and hides and skins in other important producing areas. When the Tanjore and Kumbakonam Marketing Societies begin to function, rice grading will be done by them also in addition to grading now in progress by rice grading unions of mill owners in that district. A suggestion to make the grading staff direct employees of the Department was also endorsed by the Board. As regards the work of the Provincial Marketing Society, Madras, the Board came to the conclusion that while it held hopeful signs of advance as a fruit sale society, it was considered that the marketing of other commodities would be best developed through creation of commodity sale societies with subsequent organization in local federations.

The next meeting of the Board will be held in February 1941.

(From the Director of Agriculture).

Crop & Trade Reports

Sugarcane—Intermediate condition report. The condition of the sugarcane crop is generally satisfactory and the yield is expected to be normal in all districts.

The wholesale price of jaggery per imperial maund of 82 2/7 lb. (equivalent to 3,200 tolas) as reported from important markets on 9th December 1940 was Rs. 5—2—0 in Erode, Rs. 4—7—0 in Mangalore, Rs. 4—4—0 in Rajahmundry,

Rs. 4—3—0 in cuddalore, Rs 4—2—0 in Cocanada, and Adoni, Rs. 3—15—0 in Salem and Chittoor, Rs. 3—14—0 in Vizianagaram, Rs. 3—5—0 in Vellore, Rs, 3—4—0 in Trichinopoly, Rs. 2—14—0 in Bellary, Rs. 2—6—0 in Coimbatore. When compared with the prices published in the last report, i. e., those which prevailed on 4th November 1940, these prices reveal a rise of approximately five per cent in Cocanada and a fall of approximately 15 per cent in Vellore, 13 per cent in Mangalore, nine per cent in Cuddalore, eight per cent in Rajahmundry, five per cent in Chittoor, two per cent in Bellary and one per cent in Erode, the prices remaining stationary in Vizianagaram, Adoni, Salem and Coimbatore. [*From the Director of Industries & Commerce.*]

Cotton Raw, in Madras Presidency. The receipts of loose cotton at presses and spinning mills in the Madras Presidency from 1st February to 6th December 1940 amounted to 498,728 bales of 400 lb. lint as against an estimate of 366,800 bales of the total crop of 1939—40. The receipts in the corresponding period of the previous year were 467,345 bales. 5,05,621 bales mainly of pressed cotton were received at spinning mills and 122,786 bales were exported by sea while 135,214 bales were imported by sea mainly from Karachi and Bombay.

(*From the Director of Agriculture*).

Paddy—1940-41 Second Report. The average of the areas under Paddy in the Madras Province during the five years ending 1938—39 has represented 13·2 per cent of the total area under Paddy in India.

The area sown with paddy up to 25th November 1940 is estimated at 8,928,000 acres. When compared with the area of 8,486,000 acres estimated for the corresponding period of the previous year it reveals an increase of 5·2 per cent.

The area is the same as that of last year in Guntur and the Nilgiris. A decrease in area is estimated in Kurnool, Anantapur and Tanjore and an increase in area in the rest of the Province, especially in Vizagapatam (plus 90,000 acres), East Godavari (plus 25,000 acres), West Godavari (plus 65.000 acres), South Arcot (plus 25,000 acres), North Arcot (plus 45,000 acres), Salem (plus 50,000 acres), Trichinopoly (plus 25,000 acres), and Madura (plus 50,000 acres). The increase in area is attributed to timely sowing rains.

The first crop of paddy has been generally harvested throughout the Province. Yields slightly below normal have been reported from Vizagapatam, Chingelput, South Arcot, Chittoor, North Arcot and Tanjore. The yield is expected to be normal in the other districts. The crop has been affected to some extent by the heavy and continuous rains of November 1940 in parts of the Tanjore district and by insect pests in parts of Vizagapatam.

The seasonal factor for the Province as a whole works out to 99 per cent of the average as against 97 per cent in the corresponding period of the previous year.

The wholesale price of paddy, second sort, per imperial maund of 82 2/7 lb. equivalent to 3,200 tolas as reported from important markets on 9th December 1940 was Rs. 3—12—0 in Masulipatam, Rs. 3—9—0 in Ellore, Rs. 3—8—0 in Rajamundry, Bezwada and Guntur, Rs. 3—7—0 in Cocanada, Rs. 3—5—0 in Trichinopoly, Rs. 3—3—0 in Tinnevelly, Rs. 3—2—0 in Vellore and Virudhunagar, Rs. 3—0—0 in Vizianagaram and Chittoor, Rs. 2—14—0 in Hindupur and Kumbakonam, Rs. 3—13—0 in Negapatam, Rs. 2—9—0 in Cuddalore and Mangalore, Rs, 2—5—0 in Anantapur and Rs. 2—1—0 in Conjeevaram. When compared with the prices published in the last report, i. e., those which prevailed on 4th November 1940, the prices reveal a fall of approximately eight per cent in Conjeevaram, and a rise of approximately ten per cent in Nagapatam, eight per cent in

Cuddalore, seven per cent in Masulipatam, six per cent in Ellore and Trichinopoly, four per cent in Bezwada and Chittoor, two per cent in Cocanada, Rajamundry, Guntur, Hindupur and Kumbakonam, the prices remaining stationary in Vizianagaram, Vellore, Virudhunagar and Tinnevelly.

(From the Director of Industries and Commerce).

College News and Notes.

Students' Corner :- Students' Club : Under the auspices of the Students' club Sri. N. Krishnaswami Iyengar, B. A., B. L., Sub-judge, Coimbatore, delivered a lecture on "Advise to the students" on 4—12 -40, with Rao Bahadur G. N. Rangaswami Iyengar, Principal in the chair. The lecturer deplored the utter lack of self confidence, the courage of conviction and individuality of judgement that are essential for the development of a dynamic personality. He stressed upon enduring patience and unflinching perseverence for success in life. Plain living and high thinking along with sports-man spirit, should, in the opinion of the lecturer, radiate happiness. Finally the lecturer exhorted the students to develop the immence faculty of intelligence—a speciality of mankind.

Games. On account of the second terminal examinations students' activities have decreased considerably, in both indoor and out-door games.

Hockey. The Bangalore division final hockey match was played at Bangalore against the Ceded districts' College. Our college lost by one goal to nil. The reverse was not due to any superiority of the opponents but unfortunately, due to our players not rising up to their full form. The Vice-President Mr. H. Shiva Rao accompanied the party of players to Bangalore.

Foot-ball. In the inter-tutorial foot-ball match played between Sri. C. R. Srinivasa Iyengar's wards and Sri. C. Narasimha Iyengar's wards, the former won by one goal to nil.

Association of Economic Biologists. A meeting of the association was held on Thursday the 28th November when the following papers were presented:—

1. The probable nature of the clay complex responsible for base exchange phenomena in soils by Sri. C. Raghavendrachar, Assistant in chemistry, and 2. the problem of mixture in the cottons of the Tinnies area by Rao Bahadur V. Ramanatha Ayyar and Sri. V. Ramaswami Mudaliar. This was followed by interesting discussion on the papers.

Two public lectures were also arranged (i) Training in Agriculture by Rao Bahadur Sri. V. Ramanatha Ayyar on 3—12—40 and (ii) Agriculture in Uganda by A. S. Thomas Esq. Economic Botanist, Uganda on the 9th December 1940.

South Indian Branch of the Entomological Society of India. A meeting of the South Indian Branch of the Entomological Society of India was held on Tuesday the 10th December when Sri. T. V. Subramaniam gave an account of his trials with Malarial and Pyrocide 20 larvicide to test their relative merits as mosquito larvicides when used in the irrigation water in paddy fields, especially with regard to their effect on the crop. Sri. P. N. Krishna Ayyar read a paper on 'Host-selection by *Spathius critolans*, Nixon., a braconid parasite of *Pempheres affinis* in S. India in which he detailed the tropic response of the insect to sensory impressions awakened by the host relative to size, shape, etc., and the factors governing the incidence of super-parasitism and the general interactions of host parasite populations. A few interesting insect specimens were also exhibited at the meeting.

Personal. Intimation has been received that Mr. P. H. Rama Reddy, Director of Agriculture who was on leave for six months has rejoined duty at Madras on the 11th December.

Mr. A. R. C. Westlake, I. C. S., who was Director of Agriculture during the absence of Mr. Reddy has been posted as Collector of Coimbatore.

Mr. R. C. Broadfoot, Principal of the Agricultural College, who has been in indifferent health for some months has been granted an extension of leave from December 24, 1940 to 4th Febuary 1942 preparatory to retirement.

Visitors. Dr. A. Subba Rao, Soil Physicist, Dry Farming Station, Hagari was on a short visit to the Research Institute.

Mr. A. S. Thomas, B.Sc., Economic Botanist, Uganda, visited the Agricultural College and research institute.

Mr. R. W. Littlewood, Livestock Development Officer, Madras, stayed on the College estate from 11th to 17th December.

A party of students and staff of the Board High School, Bhavani, the Govt. Training School, Coimbatore, and the Govt. Training School for Women, Palghat, visited the College and Research Institute and Central Farm.

OBITUARY

We record with deep regret the death of Sri. V. Panduranga Rao, Assistant in Plant Physiology, in the Bellary Dry Farming Scheme, on November 28, 1940.

Sri. V. Panduranga Rao was an M. A. of the Madras University and joined service in this Department as an Assistant to the Millets Specialist in 1926. In 1935 he was appointed as Assitant in Plant Physiology and posted to Hagari to work in the Dry Farming Scheme. He was deputed to America (Nebraska) to study plant physiology under Dr. J. E. Weaver. He stayed in America for about 14 months where he acquitted himself very creditably. During his stay he obtained the M. Sc. degree and was elected to the Honorary Scientific Society of Sigma XI as an active member. He returned in 1937 and plunged into his work, specialising in root studies and control of soil erosion, till the time of his death at the age of 36. His researches were of a high order. He endeared himself to one and all of his colleagues and acquaintances by his genial manners. He leaves behind him his young wife and 3 children, his aged father who is a retired Assistant Secretary to the Board of Revenue, Madras and numerous relations and friends to mourn his untimely death.

Weather Review—NOVEMBER 1940.

RAINFALL DATA

Division	Station	Actual for month	Departure from normal @	Total since January 1st	Division	Station	Actual for month	Departure from normal @	Total since January 1st
Circars	Gopalpore	0·2	−3·8	72·1	South	Negapatam	43·1	+25·4	58·2
	Calingapatam	0·1	−3·8	45·9		Aduthurai *	21·5	+10·6	44·7
	Vizagapatam	1·9	−1·9	33 9		Madura	14·0	+9·0	42·7
	Anakapalli*	1·1	−2·9	40·7		Pamban	23·1	+11·1	44·3
	Samalkota*					Koilpatti*			
	Maruteru*	3·7	−0·1	40·6		Palamkottah	10·9	+3·5	25·8
	Cocanada	6·3	+0·9	46·0					
	Masulipatam	7·3	+1·6	41·0					
	Guntur*	3·3	+0·2	33·2	West Coast	Trivandrum	7·7	0·0	66·6
						Cochin	10·2	+3·7	129·4
Ceded Dists.	Kurnool	0·2	−0·9	29·1		Calicut	7·5	+2·1	128·8
	Nandyal*	0·0	0·0	0·0		Pattambi *	6·1	+2 0	98·0
	Hagari *	0·9	−0·4	21·9		Taliparamba *	0·0	0 0	0·0
	Siruguppa*	1·2	−0·3	24·4		Kasargode *	11·1	+7·7	151·8
	Bellary	0·6	−1·6	22·0		Nileshwar*	6·1	+2·8	156·7
	Anantapur	3·1	+0·3	27·3		Mangalore	8·1	+5·0	149·7
	Rentachintala	2·4		26·7					
	Cuddapah	6·1	+2·5	39·9					
	Anantharaju-pet *	23·7	+14 4	49·5	Mysore and Coorg	Chitaldrug	1·6	−0·7	33·9
						Bangalore	6·4	+3·5	35·9
						Mysore.	13·0	+10·4	47·5
Carnatic	Nellore	26·5	+15·3	53·6		Mercara	7·7	+4·5	142·4
	Madras	22·5	+8 2	46·6					
	Palur*	36·7	+24·0	59 5					
	Tindivanam *	19·2	+8·7	43·8	Hills	Kodaikanal	23·3	+15·1	71·8
	Cuddalore	42·3	+27·2	69 5		Coonoor			
Central	Vellore	10·6	+3·6	35·8		Ootacamund *	12·7	+1·3	52·5
	Salem	3·2	−0·5	39·3		Nanjanad *	11·1	+7·1	51·5
	Coimbatore	13·3	+9·5	37 6					
	Coimbatore A. C. & R. I.*	12·8	+8·0	30·5					
	Trichinopoly	11·6	+6·0	34·3					

The weather over the Presidency was characterised by a great activity of the seasonal trough of low pressure over the south of the Bay, which was active throughout the month and occasioned almost continuous rains over the south east of the peninsula.

The month opened with unsettled weather in the south west of the Bay in the neighbourhood of Ceylon which moved into the south east Arabian sea and developed into a depression by the 3rd and into a storm on the 4th but weakened by the 6th and passed away by the 7th. On the 7th weather was again markedly unsettled to the west of Ceylon but the unsettled conditions disappeared by the 9th. Again on the 11th weather became unsettled in the south west of the Bay and developing into a depression and crossed inland and lay near Salem on the 12th morning, moved into the Arabian sea the next day, and intensifying into a storm on the 14th, weakened off the Kanara coast by the 15th.

On the 15th unsettled condition in the south of the Bay developed into a depression centred near latitude 13°N and Long 85°E and moving in a north easterly direction as a storm lay centred at Lat. 19°N and 89°E by the 18th but

became unimportant by the 19th morning when a fresh depression formed in the Central Bay of Bengal and weakened and filled up off the Coromandel coast by the 24th. On the 27th conditions were unsettled in the North East and East Arabian sea but passed off by the 27th. Weather in the south of the peninsula was more settled from then till the end of the month. The almost continuous unsettled weather associated with the activity of the trough of low pressure and resulting in the formation and passage of depressions across the south of the peninsula, and in the Bay, occasioned very heavy rainfall in the south east of the peninsula.

Rainfall over the Presidency was in very large excess in the Carnatic, Central and Southern districts and in the adjoining areas in the Ceded districts and in Mysore, Coorg and Malabar being in some cases over 400% of the average rainfall. Rainfall was in large defect in the northern districts of the Circars, and in slight defect in the Ceded districts in the western parts.

The chief falls of rain reported were:

Nagapatam	...	10·4″ (6th)
Nellore	...	6·4″ (13th).
Pamban	...	5·4″ (18th).
Madras	...	5·1″ (12th).
Cuddalore	...	4·9″ (2nd).
Vellore	...	4·3″ (12th).
Coimbatore A. C. R. I.	...	4·46″ (3rd).
Cochin	...	3·7″ (14th).
Mysore	...	3·7″ (24th).
Masulipatam	...	3·6″ (10th).

Weather Report for the Agricultural College and Research Institute Observatory

Report No. 11/40.

Absolute maximum in shade	...	88·8°F
Absolute minimum in shade	...	66·3°F
Mean maximum in shade	...	83·1°F
Departure from normal	...	−1·4°F
Mean minimum in shade	...	70·5°F
Departure from normal	...	+2·0°F
Total rainfall for the month	...	12·77 inches.
Departure from normal	...	+7·97 ,,
Heaviest fall in 24 hours	...	4·46 ,,
Total number of rainy days	...	11
Mean daily wind velocity	...	1·1 m. p. h
Departure from normal	...	−1·13 ,,
Mean humidity at 8 hours	...	88·2%
Departure from normal	...	+7·6%

Summary: The weather during the month was characterised by almost continuous rain, due to the disturbances originating in the Bay of Bengal The rainfall was in very large excess, being 12·77 inches or 7·97 inches above the average. The heaviest fall in 24 hours was 4·46″ recorded on the 3rd which constitutes a record for over 18 years of rainfall records at the institute.

Skies were in general heavily clouded and humidity in excess. Day temperatures were below normal and night temperetures above normal. Air movement was generally below normal.

P. V. R. & R. S.

Departmental Notifications.

Gazette Notification.

Appointment.

Sri. M. Sanyasi Raju, Assistant in Bacteriology section, Coimbatore is appointed to officiate as Agricultural Bacteriologist, Coimbatore in category 7 class I Madras Agricultural service with effect from 3rd January 1941 vice Mr. P. D. Karunakar granted leave.

Sri. T. V. Subrahmanya Ayyar, Assistant Entomologist, Coimbatore, will be in charge of the duties of Government Entomologist, in addition to his own during the absence of Mr. M. C. Cherian on leave for 9 days from 3rd January 1941 with permission to prefix Christmas and New year holidays and suffix the holidays from 12th to 14th January 1941.

Sri. L. Narasimha Acharya, Agricultural Demonstrator, Chittoor, is appointed to officiate as Assistant Director of Agriculture, in category 6—class I Madras Agricultural service and is posted to Cuddalore.

Sri. V. N. Subbanna Acharya, Agricultural Demonstrator, Rayadrug is appointed to officiate as Assistant Director of Agriculture in category 6, class I, Madras Agricultural service and is posted to Cuddapah.

Transfers.

Name of officers.	From	To
Sri. K. Raghava Acharya,	Asst. D. A., Cuddapah	Asst. D. A., Madura.

Leave.

Name of officers.	period of leave.
Sri. M. U. Vellodi, Asst. D. A., Tellicherry.	L. a. p. for 3 moths from the date of relief
„ M. Anandan, Asst. D. A. Cuddalore,	L. a. p. for 28 days from the 26—11—40
„ Samuel Jobitha Raj, offg. Asst. D. A., Madura,	L. a. p. for 4 months from the date of relief.
„ P. D. Karunakar, Agricultural Bacteriolgist, Coimbatore.	L. a. p. for 1 month from 3—1—41.
Mr. R. C. Broadfoot, Principal, Agricultural College, Coimbatore.	Extension of leave from December 24, 1940 to February 4, 1942, preparatory to retirement.

Subordinate Services.

Transfers.

Name of officers.	From	To
Sri. I. Kurma Rao,	A. D., Repalli,	Special duty in the Vuyyuru Factory area.
„ G. L. Narasimha Rao, A. D.,	A. D., Special duty, Vuyyuru Factory area.	A. D., Repalli.
„ A. R. Krishnamurthy,	A. D., Madura	A. D., Karur.
„ V. K. Appaji	A. D., Karur,	Special duty Sugarcane work Pugalur.
„ V. Ratnaji Rao,	A. D., (on leave)	F. M., Kalahasti.
„ N. V. Kalyanasundarm,	F. M., Kalahasti,	A. D., Kalahasti.

„ E. K. Govindan Nambiar	F. M., (on leave)	F. M., Taliparamba.
„ P. A. Narayanan Nambiar,	F. M., Taliparamba	A. D., Krishnagiri.
„ N. Srinivasa Rao,	A. D., Krishnagiri	A. D. Salem.
„ N. S. Rajagopal Iyer	A. D., Salem	A. D. Rasipuram.

Leave.

Name of officers.	Period of leave.
Sri. J. Suryanarayana, A. D., Gurzala.	Extension of l. a. p. on m. c. for 1 month and 5 days from 19—11—40.
„ B. N. Padmanabha Ayyar, A. D., Gingee.	Extension of l. a. p. on m. c. for 2 months from 1—12—40.
„ C. S. Namasivayam Pillai, A. A. D., Nanguneri.	Extension of l. a. p. for 2 months with m. c. from 19—11—40.
„ M. S. Kylasam, Asst. in Entomology Coimbatore.	L. a. p. for 28 days from 26—11—40.
„ E. Achuthan Nayar, Asst. A. D., Harur.	L. a. p. on m. c. for 4 months from 19—11—40.

Notice.

Members, and subscribers, whose subscription expires by 31st December 1940, are kindly requested to remit their subscription before the end of January. The M. O. form with particulars filled in is enclosed for their convenience.

K. Ramaswami,
Manager.

CONTENTS

Messages.

I welcome the proposal of your Union to bring out in the course of March 1940 a Students' Annual as a supplement to the Madras Agricultural Journal which has been doing distinct service to all those interested in Agriculture. The Annual, if it is properly conceived, is bound to serve as one more link between the Students of the Agricultural College and the officers of the Agricultural Department which would enable the latter to understand the students better and promote their interests. I wish the Annual every success and hope that it will gain strength year after year.

P. H. RAMA REDDI,
Director of Agriculture, Madras.

I have been requested to introduce a new-comer to Literary and Artistic circles—a publication, grave and gay, humorous yet thought-provoking, a production of the student mind and energy, which I hope will receive a favourable reception by readers privileged to peruse its pages. This journal arises as a result of a students' resolution passed at the Madras Agricultural Students' Union General Body Meeting in July last and for the present its publication will be as an annual. Although modelled on the lines of a well-known English publication, its contents will be entirely the work of the Students and it will represent their activities at work and play and this number clearly indicates the versatility of the students in the year of Grace 1940. It has my sincerest good wishes for its success. I hope it shall have many birthdays each more notable and encouraging than its predecessor. With these words I introduce this journal to its readers.

R. C. BROADFOOT,
Principal, Agricultural College.

I have great pleasure in responding to the request of the Secretary, Madras Agricultural Students' Union for a message of good wishes on the occasion of the publication of the Students' Annual as a supplement to the Madras Agricultural Journal. The decision of the Union to publish a Students' Annual has been a happy one as it has afforded an opportunity to the students to display their talents. Let me congratulate the students on their excellent production and wish the Annual every success.

M. C. CHERIAN,
Vice-President, M. A. S. Union.

My hearty greetings to the "Students' Annual", the happy consummation of the earnest endeavours of the students for the past two years.

It gives me added pleasure to send this message, having been connected with the Madras Agricultural Students' Union as Manager and Secretary during this period.

The "Tatler" bud of the Hostel has developed into the 'Annual' fruit of the Union. I am sure that this supplement of the students' activities will serve as a dessert to the 'scientific' menu purveyed in the columns of the Madras Agricultural Journal.

I wish the Students' Annual many happy returns.

P. A. VENKATESWARAN,
Hostel Warden.

I have very great pleasure in responding to your request to send a message of good wishes on the occasion of the Madras Agricultural Students' Union taking yet another step in making it more popular and widening its sphere of appeal, especially to the ex-Students of this College, by publishing a Students' Annual as a supplement to the Madras Agricultural Journal.

The Madras Agricultural Journal is primarily concerned with publishing scientific investigations, carried on mostly by the members of the Department, in simple and popular language so that the results of the scientific work may be clearly grasped and practised by the subscribers to the journal, some of whom may not be so well versed in science as to follow the original articles replete with scientific terms.

Another function which it has been successfully discharging is that of serving as a medium for publishing the activities of the students of the College on a page named " Students' Corner " and thereby serving as a link between the past and present students of the Agricultural College. The space devoted was not commensurate with the numerous and diverse activities, and the management has been considering for some time past ways and means of adequately conveying them to the readers in general and to the ex-students of the College in particular who, I understand, turn, on receipt of the Journal, to the " Students' Corner " first to acquaint themselves with the achievements of the present batch of students, to which they may have themselves contributed while in *Statu pupillari.*

It gives me very great pleasure and satisfaction to learn that the management of the Journal has solved the difficult problem by issuing a Students' Annual as a supplement to the Journal.

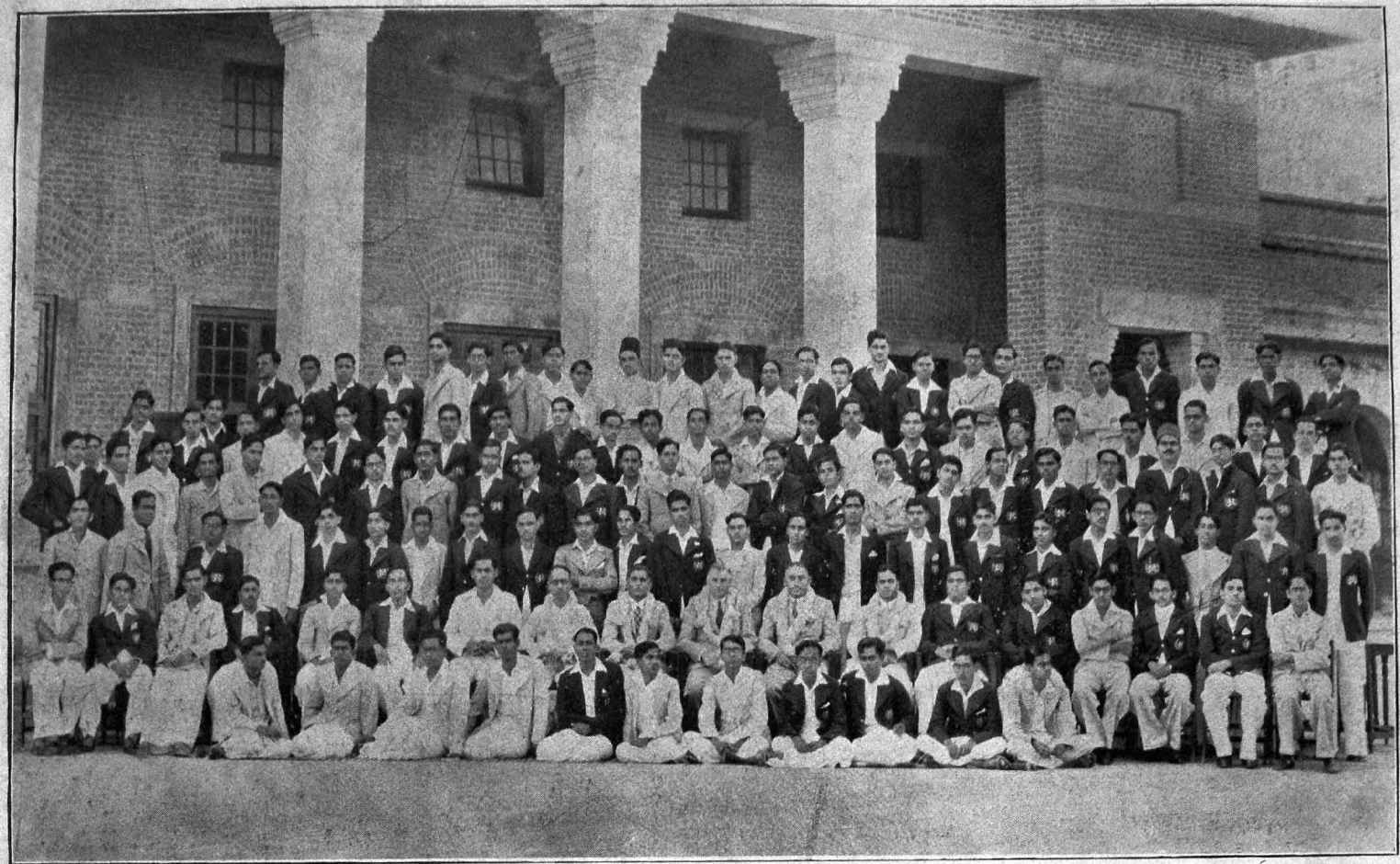
I send my hearty congratulations to those who guide the policy of the Journal on this occasion of making a departure, which will not only find favour with the readers but will widely be welcomed by them. To the students also, I convey my felicitations on their successful negotiations to acquire wider publicity to their activities and I earnestly hope that the Annual Supplement will be prepared with considerable care and pains, so that it will be in consonance with the high traditions of the Journal.

H. SHIVA RAU,
Vice-President, Students' Club.

The College Song.

Members of "Agricoll" Team
Ne'er fail to play the game,
Heavy though the odds may seem
Hold high the noble name.
Always look ahead of you
Ev'n though the goal is far
If to yourself you will be true,
Your success none can bar.

T. Chellappa.



Students of The Agricultural College, 1939—40.

The Tatler's Diary 1939—40

1939

June 15. The College reopens.

„ 16. The regular grinding has begun with all its implications.

„ 18. Some Late Latifs arrive.

„ 19. The election propaganda seems to have begun.

„ 22. G. Raghavalu thinks it wise not to lengthen the mid-summer holidays. So he arrives here to-day.

„ 24. The day of election. All the candidates are busy canvassing. Mr. Baskara Rao is duly elected as the Badminton captain. The hostel rejoices over his victory. The deserving man always wins.

„ 25. The elections are over. Thank heavens! All is quiet on block-fronts.

July 3. I year Class is formed.

„ 4. M. Hegde has arrived, Even the most optimistic has now to believe that the Agricultural College has reopened.

„ 13. The College Day and Conference is opened by Hon. Mr V. V. Giri. K. Bhaskaram creates a record by bagging 4 prizes of the II year class.

„ 16. G. H. Madhuram sees the first picture in the freeman Hall. (Shown free).

„ 25. Ananthakrishna Rao of the I year gives a lecture on 'Manners' behind the 11th Block.

August 1. The Tennis courts are reopened by the Principal with the addition of one court.

„ 2. R. Veeraraghavan has the honour of being defeated by Sri. Bobjee.

„ 13. Bhaskara Rao wins over E. V. J. Cunha and proves his mettle.

„ 15. Sri. Sundareswara Iyer, Headmaster of the Wardha School gives a lecture on "Wardha Scheme." A purse is presented to him by the Agricultural College students. M. Sulaiman presides.

„ 19. Election of student representatives to the M. A. S. Union takes place. K. Rajasekara Shetty, T. Kailasa Rao and K. Ch. Vengala Rao are declared elected, amidst deafening cheers of 15 members.

„ 21. Sreshta and Ramasubramanian, the reprentatives of classes III & II respectively leave for Orumanayoor,—Carrying the gifts and good wishes of the students to Mr. & Mrs. Verghese.

„ 22. Usman, Class I wishing not to be out-done by his seniors, leaves for Trichur. He hopes to reach Ormanayoor before Mr. Verghese joins duty here, on Wednesday.

„ 23. Sreshta and Ramasubramanian come back safely. Sreshta opines that Cochin is really a place worth visiting.

„ 24. The Botany section has run short of pith. The lecturers in Botany meet to consider as to how best to meet the impending pith crisis. They have finally called for tenders from the following gentlemen for the supply of their old pith hats.

K. M. Ayyappa.
M. R. Mohan Punja.
Madhuram.
Sumitra Rao Ullal.

Stop Press.

24th August—Mr. Usman and his two lieutenants have arrived safely after being nearly lost in the Waliyar Forests.

Sep. 3. England declares war on Germany. Agricultural Students see a prospect of postponement of the quarterly Examination.

„ 5. Students hear the War news. A noise like the roaring of an aeroplane overhead is heard. All the students run into our A. R. P. Shelter (Sports material room). Bold Ayyappa goes out to investigate and finds that it is not an aeroplane but only the Entomology Lecturer's car.

„ 13. The periodic curse of exams. coming up again.

„ 15. Jubilation in the Hostel. Holidays commence. The happiest day of the term.

October 1. Our sportsmen leave Coimbatore on a games tour. The reopening of the college in prospect. Wits are put to test. A rush to the doctors in various parts of the province for medical certificates for extending leave.
Final year students start on their educational tour.
Thank goodness, the war did not affect their tour.

„ 4. College re-opens. Cheerless faces in the class rooms.

„ 5. The drudgery of regular classes commences. The warning bell for afternoon classes. Some lecturers disturb our sleep. 3rd year students at Courtallam water falls. Every body enjoys the bath. A noise like that of a steamer passing by is heard. All students turn round and find Bhasker Rao frantically beating his limbs in water. All run to his aid but are discomfited to know that 'M. V.' was just swimming. According to this champion swimmer, swimming is all noise and no motion.

,, 6. 3rd year students at Trivandrum. Several of the students are recognised by the denizens of the Zoo. Sreshta shakes hands with a chimpanzee. A giraffee accosts Veera by bending down its neck.

,, 9. At Cape Comorin. All except some shy bathers took to water. K. S. Ramaswami performs "*Sandyavandanam*". He thinks he is nearer heaven now by at least a mile and 210 yards.

,, 11. Leave Quilon for Ernakulam by the back waters. A cheery journey.

,, 12. Reconnoitering the port of Cochin.

,, 13. At Trichur. Visit to Central Farm. Students start on an endless walk. Sreshta asks how many more miles they have to walk to complete the circle round the world. Not much anyway !!

,, 18. 3rd year students return to Coimbatore. Havoc of heavy rains.

,, 19. All the beddings transported in the open double bullock cart (*kindly supplied by the farm*) from the Railway station to the college, hung up for drying.

,, 23. Janab Md. Sulaiman becomes the 3rd year class representative by common consent — a happy choice indeed !!

,, 27. Bhasker Rao has disturbed sleep because he had to arrange a badminton match the next day. 'M. V.' now knows what heavy responsibility—the Badminton Captaincy involves :—Hitler would have shuddered at the very mention of it !

Nov. 1. K. Sheenappa, the west coast Mess Rep crosses the floor and goes to the General Mess. Diplomatic circles opine that he goes on a mission of proselytization. We wonder whether he will succeed in enlisting recruits to the West Coast Mess.

,, 4. A dozen students are called for an interview by the Principal. A miniature viceregal interview !!

,, 7. Hockey match between our college and St. Joseph's ends in a draw.

,, 8. The drawn match replayed today. Great anxiety prevails—the inevitable happens. Our College loses by 2 to nil. Our secret service men inform us that the voice-box of many a Government College student was seriously dislocated.

,, 15. K. S. Ramaswami representative of the General Mess changes over to West Coast Mess probably as a counter move to Sheenappa's propaganda campaign. Well done 'K. S.'

„ 18&20 Cricket match between our college and the American College, Madura results in a victory for our team. We congratulate our cricket captain as also 'S. V.' for their remarkable display.

„ 24. Prof. K. C. Ramakrishnan gives a lecture on "Consolidation of holdings".

„ 25. Second lecture by Mr. Ramakrishnan.

„ 26. Dr. Muthulakshmi Reddy addresses the students:— Students perturbed at a wide divergence between the subject announced and what the lecturer talked about. Mr. Ramakrishnan surprises the audience by saying that cricket is the anathema of a college student. He would have rued the remark if he had told the same to the Pentangular audience.

„ 28. A debate in the Freeman Hall. Rajashekara Shetty presides. Mr. Kanti Raj is the observer. Attendance poor. The long succession of meetings we had, is evidently the cause. The speeches of Venkatarathnam and Sundararajan are punctuated with cheers.

Dec. 1. General Mess goes down in membership from 45 to 16. West Coast Mess displaces General Mess from the main dining hall.

1940

January 1. G. V. Chellappa makes a new-year resolution, not to make any more resolutions.

„ 3. Second year students start on their educational tour to the West Coast.

„ 5. The world record for climbing down a coconut tree is smashed by Jagannathan by falling down from a 30' coconut tree at Kasargod in exactly 1 1/98 second.

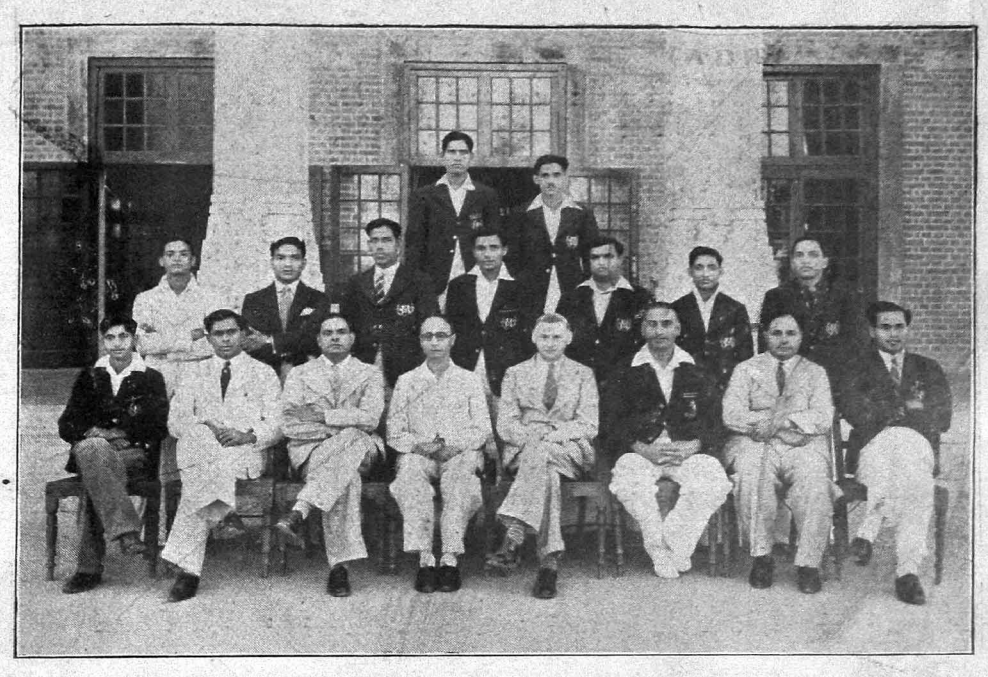
„ 9. Selection exam. results announced; no detentions in the II and III years.

„ 12. Second year students arrive at Coimbatore after completion of the tour. The students defy the jutkawalas and cover the distance from station to estate on "shanks' mares"

Mr. P. A. Venkateswaran, the leader of the party looking like a veritable G. O. C.

„ 15. Foot ball match between I & III years. Mr. C. Ramaswamy after witnessing the match, says, that any day Murthy-Raju will find a place in the All India Rugby team.

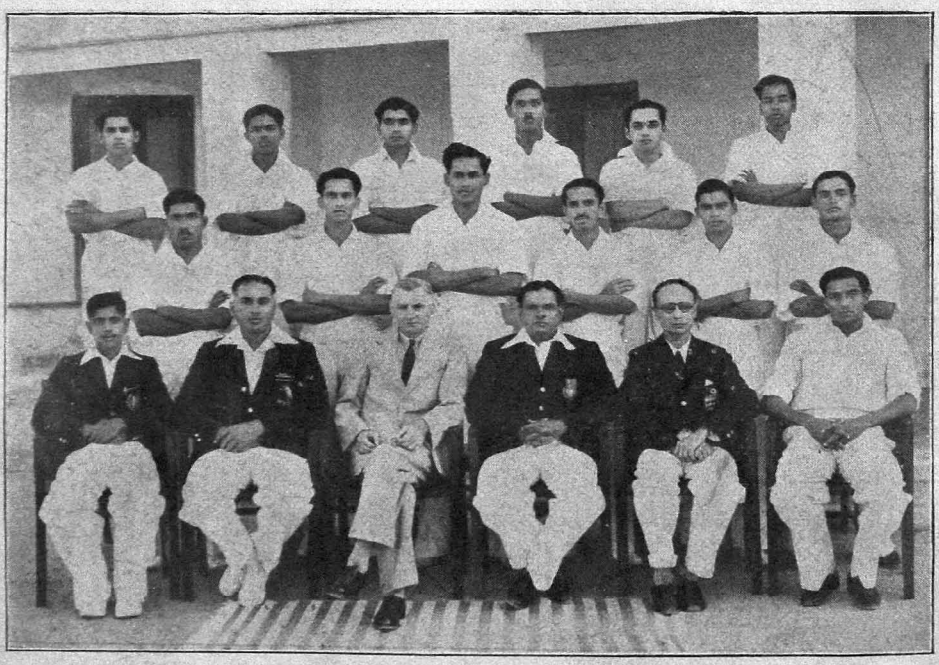
„ 16. Rajasekhara Shetty on getting up, finds, a big bundle in his room with a slip attached to it, which runs as follows "Herewith, your cycle R. I. P. (Sd.) Ananthakrishna Rao." From this, Shetty has to gather that Ananthakrishna Rao to whom he had lent his byke must have had an accident.



Members of the Executive Committee, Students' Club, 1939—40.

The College Hockey Eleven.

The College Foot-Ball Team.



The College Cricket Eleven.
Runners up in The Madras University Inter-Collegiate
Cricket Tournament, 1939—40.

Dr. Burns gives a lecture on Agricultural research practices in India.

„ 19. Sir T. Vijayaraghavachariar adresses the Students' Club. Our cricket XI and athletes leave for Madras.

„ 26. Rev. J. D. Valois of the American Arcot Mission delivers the 1st course of University extension lectures.

Feb. 1. Victory Cup Hockey tournament. III years play against the second years and get defeated by 1 : 3.
Ramasubramanian—very tired after the game, for he was one of the line umpires.

„ 8. Hunt for a man to preside over the club-day begins. Hard time, indeed, for the club secretary and the vice-president of the club.

„ 17. Club day sports— College maidan teeming with hundreds of people.

Inter-mess tug-of war, the most interesting item. Andhra mess wins proving beyond any doubt, the superiority of a vegetarian diet over a non-vegetarian diet.

„ 24. Club day. The grandest event of the term—variety entertainment put up by the students very much appreciated.

„ 25. After effects of the happy day that preceded. The Hostel gloomy-students think it is high time they take to studies.

March 1. The arena of activity of students has shifted from the club room to the various blocks. Students busy with their books.

Some of the optimistic fraternity think, they can easily make amends for their comparative inactivity during the rest of the 11 months of the year, if they work for 23 hours per day (Figures arrived at by Murthi Raju.)

"The Struggle of April".

TWO months of sleepless nights! Every day the familiar faces became more and more strange with overgrown beard. Each morn was the scene of sunken and ruddy eyes recalling a riotous night. At every moment emaciated frames emerge out of their dens frantic with mental load and vomitting into the air what they acquired in the night. While some were engaged in gossips of their past adventures, the more professional mugs were busy finding out a more lucky den.

The 3rd of April—the eve of the struggle came with its usual stride while the tide of unceasing cramming was proceeding with redoubled vigour. Life seemed to be absent in our camp which was forty strong. Every one with a book in hand was in deep meditation as if to win the Universe While many lingered on their way to the mess, some flew to get charged with fresh ammunition. The night fell, little or no food was taken by the members of our camp. Every den was occupied in time, the occupant busy preparing for the impending struggle. The desire to face it bravely made several of us become immune to the fear of mid-night ghosts.

The next morning—the beginning of the theoretical phase of the enterprise saw us bravely facing it with unflinching courage. Never did we feel that we would be taken prisoners, if defeated. The fight of the day proved to be a success by the number of cheerful faces rushing out of the hazardous arena. The struggle was renewed on the succeeding days and fought with effect. The set-back was received in the field of Chemistry-a defeat to be remembered by all. The burning of the midnight oil proved to be of no avail, when most of us failed to answer the challenge. A good many of us grew desperate while some kept on turning the challenge sheet in a pensive mood—the fate of the jackal holding the tortoise and searching for its head to get a grasp. The hitch continued for full three hours; several of us received serious injuries threatening our fall. With heavy hearts we retreated again to our camp hoping to struggle with greater valour in the practical phase of the fight.

For unknown reasons there was lull in the camp for full six days and we lost no time in getting the sufficient reinforcements to continue the fight to a successful termination. The practical phase of the struggle began in right earnest. We had to battle both within the arena as well as in the open field. Here again to our greatest disappointment, the fight in the Chemistry arena stood in the way of our hope for success. Many of us had to take to A. R. P. shelters to escape the gassed area while some had the misfortune to receive local burns. A few including a bosom friend of mine received fatal wounds. The fight continued for two more days and our last day's encounter was

confined to an open field. We had to cut through unseen foes at the direction of our Commander and we did fight with patience at the sacrifice of our dear sweat, if not life. The battle was short and I was the first man to receive a gash.

Uncertain of the result of our doings we retreated from the field of action to our base for a little rest, when we received orders of a well earned home leave. It was gratifying that the efforts of our company were commended by the Head quarters and some were mentioned in despatches for conspicuous bravery. But the inevitable happened and some of the company were lost in the struggle, for us to bemoan their loss.

K. S.

Immortal Love.

Distance cannot separate us
But lends an enchanting view
And puts us in communion with each other ;
Barriers of distance, we have broken
And none can fetter us !

O my love ! your beauty in the morning glory
So rapturously I devour
Forgetting myself and the world.
Your sweet voice in the chirping of the birds
To hear, I get up from my reverie.

Thought of you in trance I sit
Minutes, hours pass by
And I am lulled to sleep
Your sweet lullaby
In the babbling brook nearby.

Are you angry with me, dear ?
For I see your blazing eyes
In the midday sun's scorching rays.
I sit up to woo you, dear
Till I finally see you smile.

I see your calm smiling face
In the tranquil scenic beauty,
And I dance with delight
Till I see you fade away
In the darkness which fills every space.

A. G. Kesava Reddy.

It is a Topsy-turvy world.

I HAVE often felt amused at the way things go awry in this world. Alladin's lamp brought him the things he wanted, but in our case a mysterious something effects things which we do not want. Otherwise why should the penultimate Saturday synchronise with the studying mood that I seldom creep into. The rain ever makes it a point to come, when I go out in my best clothes. Encouraged by bright weather I think of donning my best suit and I actually go out, but, before I have gone half a mile it begins to rain, not cats and dogs, mind you, but whole menageries. So many times has this simple phenomenon occurred, that the weather clerk always draws up his weather chart in accordance with my holiday attire. Undoubtedly my best clothes are more reliable than the " cumulo-nimbus".

Now, as I scribble these lines, I see my time-piece before me. I see it, I said, for I do not hear it. It is evidently taking rest. Surely silence is golden, why ? I say it is radium itself, when, the hen-pecked husband, who returns home rather late, has to face a termagant wife. But such a silence is unbecoming in a time-piece.

The alarm side of it is simply tragic. It goes off at the most unearthly hours and wakes up the wrong people. Suddenly at 11-30 a. m. it sounds the alarm and the result is my next door neighbour wakes up. Once he is out of his bed nobody in the block can ever dream of a sound nap, for he belongs to the musically-inclined fraternity which pays the least heed to the feelings of neighbours. ' Music hath all the charms that soothes the savage beasts ' says my neighbour as an answer to my importunities to him not to sing, I doubt not about the veracity of the assertion; but all that I want him to know is, that there is an ocean of difference between music as such and his efforts. But it is no use arguing with him, for once an idea gets into his grey matter, nothing short of trephining can bring it out. So I have decided to put up with his music, and the silence of my time-piece.

The other day, we went for boating, and the unlucky bloke that I was, I had to be satisfied with a place in dangerous proximity to the sail. Throughout I had a vision of Dante's inferno. I do not know how. The impression on the mind of the sail seemed to be, that we were enacting a funeral, and that I was the corpse and itself the winding sheet. That the boat did not capsize, I simply mention as a statement of fact: why it did not upset, I am unable to offer any reason. I have often thought about the matter since, and I think the result may have been brought about by the natural obstinacy of all things in this world. The boat may possibly have come to the conclusion, judging from a cursory view of our behaviour, that we had come out for a morning suicide, and had there-upon determined to disappoint us.

Often have I felt that there is a secret understanding between my cycle-lamp and the Estate Havildar. Whenever I go with a lamp the Havildar is not there but let me but forget the lamp for a single day and the Havildar is at the gate ! So many times has this phenomonon occurred, that, now if I take my lamp, half a dozen of my friends go without theirs, for nine-to-one the Havildar won't be there.

Such is this world ! and every object (animate and inanimate) seems to have secretly conspired to make man's life anything but happy.

Ah, how I wish I had an Alladin's lamp.

Upsidonia, B. Sc. class III.

The Girl with the Golden Hair.

I met her first at Variety Hall,
And then at Coronation Ball;
Whene'er I met my heart was all,
For the girl with the golden hair.

Along the beach she went on a rick,
Giving my heart a happy kick;
Alas for me, I could not speak,
To the Girl with the Golden Hair.

She a good ten and seven.
Looked like an angel down from Heaven;
And so, into my heart was driven,
A desire for the Girl with the Golden Hair.

With a face beaming like moon-light,
She sat in the rick, without looking left or right,
But in my heart was a regular fight,
About the Girl with the Golden Hair.

With sparkling eyes and a Cleopatran nose,
She was a study in her saree rose;
But, into my mind I had to force,
The picture of the Girl with the Golden Hair.

So, Editor, please do not swear,
But tell me from your comfortable chair,
Do you think we will make a happy pair,
Me and my Girl with the Golden Hair ?

By C. Sankara Rao, B. Sc. I.

Our Idol.

IN any gathering of students—he goes un-noticed. Frail, medium statured, dark but not ugly, with a conspicuous nose which relieves his otherwise plain features—not prominent at anything in particular, but sure of many things perplexing to others—a slip of a boy is K. Bhaskaram—our idol.

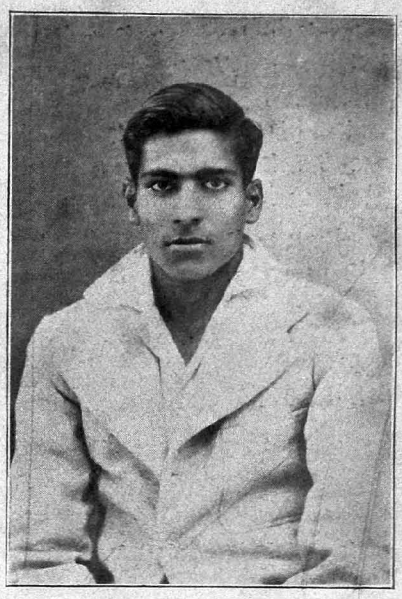
Cool and calculating, debonair, methodical in his ways and moderate in his views—despising nothing and dominating none—a perfect bohemian—Bhaskaran is devoted to his duties as only a few could be. He has a weak frame but his worst weakness is for monopolising the first prizes in any subject he sets his heart upon. To attain proficiency in every subject of a class is not an easy matter but for Bhaskaram it is perfectly easy—as easy as he makes it. He has been a big stumbling block to many of us—these three years—but he cannot help it. Prizes go to him as the greedy flies to the candy, a bitter pill for many an aspirant for academic honours. He may not be a genius—but his 'grey matter' is made of a better 'alloy' than those of his compeers—a practical mind with plenty of practical wisdom.

Others are thankful that he has not exploited the field of sports—which branch he has left to those that have more of brawn than brain. Nevertheless, he is not a book-worm. He reads less—much less than many, but assimilates more than what a dozen could do, put together, and keeps himself physically fit by mild participation in many a game.

He looks grave but his looks are simulating. A simple mind—but fathoms deep—always alert—always responsive. He has developed a sense of exquisite aloofness which keeps the inquisitive at a distance. In the field of politics, his views do not matter, although it is indicated from his rare expressions that he sponsors socialistic ideas. In controversial politics, he does not interfere and has cultivated a studied detachment from wrangles and quibbles. He may be lacking in impulse or momentum in this direction but he has an unrivalled patience.

Two decades ago little Bhaskaram must have been chuckling in his mother's bosom but the present travail ducked him in the pool of matrimony and he is all drenched. We trust that this marvellous combination of several desirable qualities will do justice to the Arch Breeder of Nature and transmit the valuable genes to several generations of his progeny.

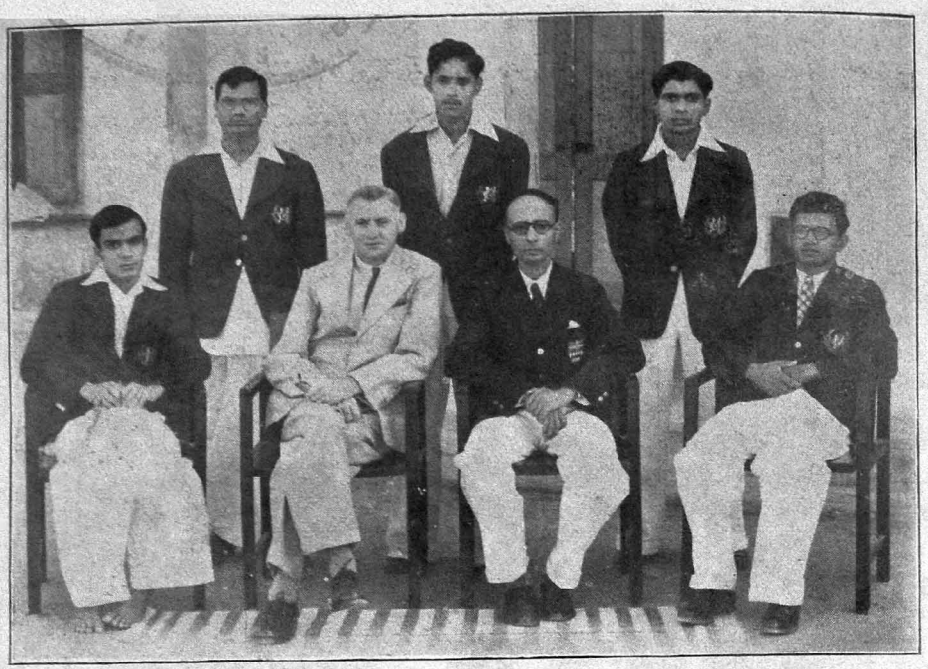
M. R. M. Punja, B. Sc. Class III.



Our Idol—K. Bhaskaran, B. Sc., III.

M. R. M. Punja,
Athletic Champion, 1939—40.

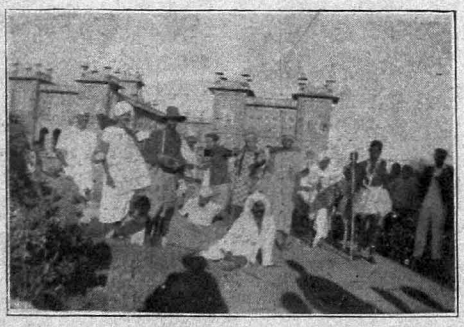
R. Veeraraghavan,
Tennis Champion & Winner of
Paralakimidi Cup for All-round
Sportsmanship.



The Men behind The Hostel Tatler.

C. Ramaswami,
the general Coach at the Nets.

Fancy Dress Competition,
1939—40.



Fancy Dress Competition, 1938—39.

A Ghostly House.

GOING along the Avanasi Road as you go to the heart of the town, somewhere on the left you will see, an old three storeyed building which must have been a palace of some rich Chettiar living in the near past. The building is not very close to the road but a few yards away from it and is islanded by a huge compound. This compound should have had a beautiful garden—the pride of Coimbatore. But now, we see only the more permanent features of that garden; as broken down water fountains, baths, flower trees, avenues etc.

This dilapidated house was said to have a reputation for ghosts, of which fact, Chander and I were blissfully ignorant as we had just then joined the Agricultural College and were strangers to Coimbatore. One day as we were returning from a friend's house, all of a sudden the sky darkened, and it began to rain in torrents. Looking around for shelter we saw no other place to go than this building. We cycled right in and waited on the verandah for the rain to subside. We found the house in a desolate condition with the doors left ajar and few of the window shutters wrenched off the hinges.

It was getting darker and darker—the time probably nearing eight and rain was getting heavier. The hostel rule that we must be in our rooms by 8-30 P. M. worked in our minds and I grew impatient.

"Say, Chander", I said "I do not think, we should wait for the rain to stop, as it is already late and it would be impossible for us to reach the hostel in time for food, if we waited. What do you say? Shall we go in spite of the rain?"

My friend Chander has an adventurous sort of mind and seeing the huge ancient building, did not like the idea of missing the prospect of a night's adventure. I knew what was in his heart, although he replied.

"What Prakash, don't you think it absolutely foolish to venture out in this blasted rain and get pneumonia for trying the experiment. I think, the warden will be more pleased if he knew that we sacrificed our night meal and stayed out for such a reason."

So, we remained in the house for the night. The rain had not only not stopped but seemed to increase in intensity.

Chander who had been sitting down thoughtfully for some time suddenly rose up.

"Prakash, come, let us explore this empty house; you need not be afraid; I have a torch".

It is true, I am chicken-hearted although I do not admit it. I had a premonition, that this building was likely to contain ghosts or the like. I put on a bold face with my chin right up and shouted 'Righto'.

We crossed the threshold of the house and as we walked our shod feet resounded in the rooms we traversed.

What was that? I am sure I heard it—the sound of a door banging. I held my breath, while my whole body trembled.

"Wait", I just managed to whisper "Didn't you hear that sound?

"What sound, you ass"?

"That sound which seemed to come from there". I whispered indistinctly, while my teeth chattered perceptibly.

"Come on, don't be a goat" bawled out Chander and dragged me to the small room which contained the stair case leading to the second floor.

We had just gone to the second floor, when the same sound was heard again. This time it was louder and nearer. Even deaf Chander heard it.

"You heard it this time, Did'nt you, Chander?"

"Yes I did. But I think that it is some wind that is banging the bally doors".

It was about this time that the rain had abated and gentle breeze had sprung up which we felt through some of the open windows. Knowing this, I objected to his conjecture, attributing the cause to the slight breeze. But he quietened me and pulled me on. Suddenly he turned around and said "What is the matter?"

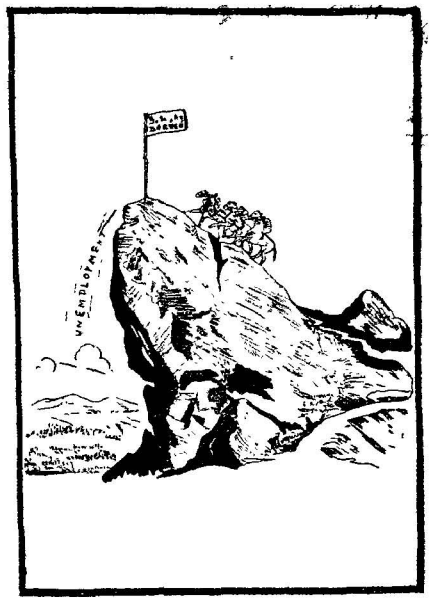
Then I remember wandering in the second floor for sometime, When all of a sudden, we heard steps coming down the stair-case from the third floor. We heard them distinctly and could count them; One! Two!!. Three!!!—!!!!

Everything became still. The steps on the stair case had ceased and by the sound of the foot steps we knew that somebody was coming towards us. At that time we were standing or rather pinned to the floor in the middle of a large hall.

At the threshold of our room the sound of steps stopped but, in floated a white turbaned figure of huge dimensions wearing a white garment similar to that of the peon of a Madras Minister minus his office sash. His eyes shone like two powerful lights and the rows of teeth sparkled in the darkness. In his black hand, he held a massive *talwar* and he moved slowly—very slowly towards us. While raising his formidable weapon threateningly, he began shouting some gibberish which I concluded was some old Tamil war cry.

Seeing the dreadful apparition, my knees rocked with great fear and I opened my mouth to shout. But I could not get my voice. I felt a helpless wretch. Then I saw the glistening *talwar* come down, aimed right on my neck, and it came nearer and nearer. My knees grew weak and in my confusion, I gave a shriek which would

What odds !
Oh, poor Agricultural Students !



Is your goal brighter ?

Darwin Contradicted.

C. S. Krishnamurthi, Class III.

have wakened even the dead from their graves. God only knows how I managed to find my voice again.

Every thing became blurred and through the haziness I heard Chander's voice faintly enquiring "

" How are you feeling Prakash "?

I slowly opened my eyes and looked around. Yes, I was still in the building. Chander was bending over me and wiping a wet cloth on my face. I then recollected what had happened and began to wonder.

" Chander didn't we go around the house "?

" Yes, we did, but keep quiet for some time ".

" Tell me Chander, please, what happened after that "?

" Alright if you promise to listen quietly."

" Yes, I do ".

" When we were going to the second floor, you again heard that voice and I pulled you up but unfortunately you slipped and fell down the stairs, a limp body ."

" Seeing you utterly unconscious, I grew alarmed. Being a trained scout I tried to calm my fears and carried you down to the first floor and laid you down on the verandah. I opened your buttons and removed all the pressure on the body. Then I tested your heart. It was beating low ."

" I switched on the torch and searched for any wound on the body. Except for the huge swelling on the fore-head there was nothing else. (Strangely enough I did not feel the swelling and so its presence had escaped me.) I wetted my hand-kerchief and gave you a cold fomentation. I think you had better sleep on. By the morning you will be fit to ride back to the Hostel. Instead of an interesting night, you have given me an anxious one". (But wasn't it an interesting one for me ?)

I have not told Chander my dream, but if he comes to know about it he will start ragging me as the chicken hearted warrior.

N. J. Sreshta, B. Sc. Class III.

Personalities of the Day.

VERY rarely is a Prophet honoured in his own times. So is the fate of a genius. Either his greatness is completely ignored or recognised only when it is too late, perhaps not earlier than his consignment to the cold marble. The world recognised the greatness of Jesus, the purity of his soul and the high philosophy of his preachings not when he was alive, but only after he sacrificed himself for the "betterment of the humanity." The world paid homage to the brilliant intellect of that "illiterate genius and philosopher" only when he was no more; of course I am referring to Shakespeare. But this is only one of those accepted axioms, always accompanied by those noble exceptions which go to prove the veracity of the rule. For example our friend Dr. Graham Sullivan is a living example of such exceptions. The village school-master openly admitted the precocious intelligence of Graham, the boy. Now the world accepts without the least hesitation, that he was a genius, he is and he will continue to be so as long as he lives....

He hails from a remote village, a point, which he shares in common with most of the great men of the day. He will be twenty three next July. He is a blooming guy of perfect build and medium height: his cheeks are ruddy indicating the perfect health he enjoys; his lips, though of the 'bloated type' are cherry red. In short, he is a handsome youth with an attractive personality. As a matter of fact that is the reason, why he was popularly known as "Robert Taylor" in his College...

He was educated at the "American College" of the London University and he took his "Bachelor" degree in his eighteenth year. It would be impossible to attempt enumerating here, all the academic distinctions he won at the institution, during the short period of his stay. Suffice it to say that he was known for his oratory and he filled the Presidential chair of the London University Students' Club, on several occasions. Unfortunately I have nothing to say about his sporting activities but he was the winner of the trophy for "All round inefficiency". In this connection it would be interesting to know that he has claims to be the winner of the 'Tennikoit County Shield'. Circumstantial evidence being absent, let us fervently hope that it is not far from truth. By Jove! I forgot to tell you. In one of his weak moments he confessed to me that he tried "Tennis" for 4 years in India and gave it up finally at London, in utter despair at finding no improvement in his game.

Soon after his return to India in 1937 a Doctorate was conferred on him by the Aligarh University. We are kept entirely in the dark

as to the subject he chose for his thesis. Never commit the folly of asking him about it, if you meet him. He is very sore when any one mentions the topic. Of late he was elected the "lifetime Secretary" of the Methodist Club (by the way I may tell you, it is a human miscellany, a curious conglomerate of discordant and incompatible individuals who agree only to differ from each other). Since his entry into the Methodist Club, he has eclipsed Colonel Bore, who was till then the dominating figure of the club. He is always complimented in the club for the choice of his toilet materials and the smartness of his dress. But personally I would have liked his dress but for the alarming shortness and gaudy colours of his coats.

Dr. Sullivan, as you know is a good conversationalist and a strict believer in "Johnsonian labour". He asks us to believe that in this wide world there is not even a single subject in which he is not well versed. He is all-in-all and talks with authority on every topic. His arguments are, more often than not, unconvincing and queer and as unacceptable as a vegetable bitter. If he succeeds in winning over an assembly to his side, it is by virtue of his high sounding language and richness of his vocabulary and not due to the strength of his arguments. Very rarely can we rely on what he considers as an established fact. He is not worried in the least if his arguments are disproved or his statements shattered. Bluffing is his strength.

If Dr .Graham does not approve of a proposition or accept the truth of a statement, you can be dead sure of the contrary. The above rule is reported to have constantly given cent per cent success till now. He has of late resorted to patriotism. Now a days he wears only khaddar. He has begun some constructive work in his village for the betterment of Agriculture. Just now, the local correspondent of the Tatler rolled into my room to tell me that Dr. Sullivan is the recipient of ' Rao Sahib ' a New year honour—rejoice, revel, on this happy occasion. Cheerio readers ! we shall meet again very soon, if the editor permits me to present to you Colonel Bore.

Saliak, B. Sc. Class III.

The Dream of "Mars"*

IT is with great pleasure that I give you here an account of the recent dream of " Mars ". I hope you will enjoy it by reading and feel cheerful as much as I do when writing this.

It puzzled me many a time, why man should not have been created in a different way altogether from what he is at present. The following idea struck me when I was inoculated a few days ago. My hand began to pain awfully and I could neither eat nor read, nor do anything satisfactorily. If I began to read, my hand would begin to pain immediately. Why should it pain ? Because the hand was in league with the brain and it would communicate all its sorrows and pleasures to the brain. The brain, a sympathiser of all the other organs of the body, would either weep or laugh according to the situation, so that, when my inoculated hand made an application of its grievance, to its seat of Justice, the brain began to weep, the eyes began to water, and the mouth began to sound. It was then that the idea occurred to me, why the various parts of the body should not work separately, without the help of any other organs. This idea took hold of me like a devil, and I worked it up hour after hour and day after day, until at last I have come to a conclusion.

Physiologically, the body of man has been divided into the head, the trunk and the limbs. These parts work as a harmonious whole. If any part of the body is affected, at once the mind becomes conscious and it feels sorry for its co-organ. The mind seems to have a parental attitude towards all the other organs. For our purpose the physiological parts of the body have got to be sub-divided. The head for example, into the ears, the eyes, the nose, the mouth etc., and the limbs into the legs. the hands etc., Supposing the human body had been created in this manner, then each organ would do its business quite independently. Then man would have been a different animal ; and this is the wonderful, imaginative being, the man as he ought to have been, that I am going to portray below.

According to this system, the eyes, the hands, the brain etc., are all separate ...each working by itself. Then it would be very convenient to all of us. We shall prove some of the merits and at the same time point out the defects of this system. First with the merits.

Many a man is called intelligent because he is a book-worm. He gets a first class in an examination because he has been a book-worm. We are sure that most of us could get the same thing if we had also been book-worms. But we are better than that. We are jolly-good-fellows, ' The Idlers' in the words of R. L. Stevenson. But if the body

* ' Mars ' is the pen-name of the Author.

had been made up of separate and portable parts, every one of us would get a first class very easily For, you can place your head (Brain) and eyes on the table and ask them to study all the twenty-four hours of the day if you like ; but at the same time you can be doing some other work with the other portions of the body. If an examination were held then, we cannot blame our fates that we were busily engaged in unavoidable duties of household and others which took away much of our time. For we can do our household work and study our lessons at the same time.

Whenever we go late to the College, our grievance is that we are not fed in time. But if the imaginary man is created, you can ask your stomach to sit and take the meal, while you can send your eyes, ears and brain to the College bench, to hear the lecture. Certainly a boon to students.

Many business-men of to-day complain that they have no time and most of them have not found a solution to save time and this idea seems to be the correct solution.

We are extremely sorry for the poet who wrote,

> ' One thing at a time and that done well
> Is a very good rule as many can tell"

For his theory would be shattered to pieces if the imaginary man becomes a reality. We can do many things at the same time and that too well. It seems to me that it was perhaps with the idea not to displease the poet, that God created man as a harmonious whole.

These are some of the merits. But what about the defects ? We may no doubt agree that the idea is very good, but we have to consider the de-merits as well. Why did not God create this new kind of man? Really the idea never occurred to him. We are absolutely certain about that.

We shall now suppose that this new man is created. Then it would be impossible to find out a thief. If a man stole a thing-whom could you accuse ? Perhaps it is the hand that stole the thing. You would certainly accuse the hand of the crime. You may even prosecute the hand. But the criminal does not care much if you prosecute one of his hands. He has got the other hand for his use. The loss of one hand would not at all be a very great loss to him.

Secondly, the Penal Code will have to be revised. The section under capital punishment will have to be removed altogether from the code. For, whom could you hang ? You could hang only the neck. The other parts of the body, it would be very difficult for you to search. The criminal is very clever. Therefore when he comes to know that he will be hung, he would keep his neck on the scaffold, send his head to England, his limbs to America, eyes to an opera, and

his belly to a hotel ! It would therefore be impossible for the hang-man to collect all the parts of an individual and hang him completely. In fact the hang-man will have to be himself hung many a time for committing illegal murder ! For, there is every probability that he will bring the eyes of one man, the belly of another man, the hands of a lady and make a mess of it and thinking all the while that he is hanging the right person. In fact he will be murdering certain portions of the body of A, B, C, X, Y, and Z, so that the section on hanging will have to be altogether removed from the I. P. C.

We now see how good the idea is. We shall make a written application to God to give us the benefit of this idea. If the reply does not come within about a week, we know what we shall do. (We shall all separate the organs of our body and at the same time go on Hunger-strike.)

We shall send an ultimatum to him.

B. Narayana Reddy B. Sc. Class III.

Believe It or Not

The craze of challenge being over, Sreshta thinks it wise to play Tennis now.

R. Veeraraghavan has submitted a thesis on ' How to break promises honourably ' !

While Gokhale was titrating, K. Srinivasan actually slipped into the 2,000 c. c. beaker and was all but drowned.

D. Narasimham and Sanyasi Rao have been chosen to represent the Agricultural College at the All India Bus Owners' conference to be held at Salem under the Presidentship of Mr. Appaji Rau, Asst. Steward.

K. V. S. Suryanarayanamurthy is busy compiling his "Tamil made easy".

The Hostel rumour has it, that Messrs Chaynulu and Narayana Reddi have been recommended for the Nobel prize for peace. W hope they won't be bracketed.

Between Big Bull and the Tatler Correspondent

Big Bull was moodily chewing his cud in a corner of the yard. I approached him with all the politeness of a news correspondent and,

Corres. *Hollo Big Bull!*

Big Bull answered me with a frightful toss of his head.

Corres. Now, Big Bull, you are repeating one of those pranks that does'nt benefit a fellow like you. You know you are the bulkiest chap in our estate and bulk, I tell you, always has gentleness about it!

Big Bull Sorry, but I thought you were one of those people, they call themselves as B. Sc. Ags., the very sight of whom makes my hump shudder.

Corres. And pray, what *may* be the cause of this all?

Big Bull My hump! You have an innocent face my friend. It all happened the other day, Wednesday if I remember right when I was mourning over the death of one of my beloveds. (Big Bull presented a sorry figure, his face upturned in thought.)

Corres. And shall I know what bad luck actually befell you that day?

Big Bull They all circled around me—those wretched people—the scum of your society and what not I call them and began insulting me. Pinched me here and there and croaked and laughed. The devil take those words, 'Mandibular joint' said one, 'Point of the buttock' said another, 'Carpse' croaked a third. And one rogue pulled my tail—ho! my hump and horn! How I hate to think of it! I raised my left leg, bent upon teaching him a unique lesson; and hush—he ran away (Big Bull laughed a cynical laugh) and a plump fellow, he had a squint in his left eye, he called me 'Poor fellow'. I did'nt like the word much. (You Know).

Corres. Is that all, my Good friend?

Big Bull Not a bit Sir, do listen. They brought damned things, 'bandages' they called them, and tied them round my legs. Bandaging an unwounded, healthy fellow like me! hum—how they dare do it! I bit the cursed thing when they all went away, bit it until it was all pulp. My hump! That's my spirit!

Corres. My Big Bull, you are entirely mistaken I tell you. You know they do it for your own good, I mean your own people in the broadest sense. They just get familiar with your

own make and after that they will do good, good, and nothing but good, good for you, good for your beloveds and good for your sons. You follow me?

Big Bull Not much. But for your sake I'll be better mannered hereafter.

Corres. Righto! and now to the matter in hand. You know I have come to get some information *about* yourself.

Big Bull Pardon me if I ask you to take up point by point.

Corres. There I have a good fellow! First of all let me know your age.

(Big Bull opened his mouth and kept silent).

Corres. Thank you. Your weight?

Big Bull Dear Sir, I ask your patience in that matter.

Corres. Well now, Big Bull, I am afraid we are facing a more personal question. I know your gentleness will not allow you get angry at a fellow like me. May I know how many beloveds you take per year?

Big Bull Things were alright chap, but of late, I have had some misunderstanding with the Surgeon and I mean to take up a wholesale strike in that matter.

Corres. My good Bull, that would be too radical to be sure. But do tell me what is amiss here.

Big Bull My good Sir, hear me. My daughter, my poor dear miss, she was murdered and by the surgeon himself. Oh my hump! that love's labour should be lost! Buhoo—

Corres. Anything else, my chap?

Big Bull Yes Sir, and much of it. He laughed louder than others the other day and poked a cursed instrument into my mouth. I couldn't do much but gape at him, my mouth wide open. My hump! I suffered much.

Corres. My friend, I am at a loss to say anything here at present. But I do promise to speak to him and set matters right. But in the mean-time, do give up the strike.

Big Bull Yes, and for your sake, mind you.

Corres. Thank you. Shake hands.

Big Bull Shake heads.

On Sleep

" Early to bed and early to rise
Makes one healthy, wealthy and wise."

Thus runs a copy-book maxim set to our ink-stained youth. Like many others of its category, this has a ton of truth in it, but some inner voice prevents me from swallowing this doctrine entirely. In regard to the " early to bed " part of it I heartily concur with the poet, but the latter half somehow stinks in my nostrils and no amount of argument will ever make me an early riser. You may tell me that only early risers go to heaven. In that case I prefer to be in hell.

Now coming to the first part of the maxim—I am not a night bird. I simply love my bed. I know that insufficient sleep makes a man pale and sallow and I always aim at the peach-bloom complexion which comes from a sensible twelve hours between the sheets. One of the eminent doctors—I forget which—once said, that a certain number of hours' sleep each night—I cannot recall at the moment how many—makes a man something—which for the time being has slipped out of my memory.

But alas, for the student, who is dogged by ever-recurring examinations ! Can he ever retire to bed early ? Certainly not !!! It is indeed these examinations that ruin the health of India's youth. I have got a lot more to say against this inhuman system of examination, but I think I had better be silent on that rather touchy subject.

O, sleep, thou nature's balm
What harm has not been done to thee
By the wretched examination.

Were not these lines a spontaneous poetic outburst of a student who was preparing for an examination ? Oh ! what an uphill task it is—this fight against sleep. You requisition the help of all your oratorical powers and try to convince yourself, that the examination is close at hand and that you have got to read. Well so far so good. You enter the room all right—why, you actually take the book and start reading. You cover a page. Now comes the ordeal. You soon find that something is wrong somewhere, for you proceed with infinite slowness. Somehow you find yourself stranded at one sentence. To use a more common simile, your eyes remain glued to a sentence like a postage stamp. You become desperate. Doubts arise as to whether, it is not better to fail in examination, than to secure a pass at so great a peril to your health. Well, the next step is the inevitable one of switching off the light, and thus ends the travail, happily no doubt, but with far reaching repercussions on the marks-list. How foolish indeed of those moralists to say that " well begun is half done " and all that sort of stuff.

I have often wondered why our College hours begin at 6-30 a. m. I simply cannot understand the rationale of it. I think the time-table must have been drawn up by one of those insomniacs. Otherwise there is absolutely no reason why they should insist on so early an hour as that. Whoever has not felt that the early hours of the day are best spent beneath a snug shawl. Oh! to be supinely lying on bed—to be a lotus-eater for a while—to be feasting oneself on the chimerical visions and contemplating on a hundred and one sweet things—among others of the miss next door who had cast a sheep's eye on you. It is simply marvellous. It is indeed with a sense of pity that I look upon these human larks for whom the day begins at 4 a. m. for they deny themselves some of the happiest hours the Almighty has given to man. As for me it is simply impossible to get up in the early morning, not that I have not tried, but my attempts to rise early are simply a list of failures. I feel I can keep out of bed alright, once I got out of it. It is the wrenching away of the head from the pillow that I find difficult and no amount of overnight determination makes it easier.

Coming to a consideration of those men who suffer from insomnia, I have often wondered, how there ever could exist such a malady, when a science called plant chemistry is in existence. You think, reader, that it is a 'terminological inexactitude' and that I ought to have said "medicine" instead of "Chemistry". But I stick to my word "Chemistry" still. Indeed, plant Chemistry can do a lot to alleviate this human affliction. You wonder how there could ever be any connection between Plant Chemistry and Human Pathology. It is quite simple. My grandpa was suffering from insomnia and now he is a veritable *Kumbakarna*. Must have started taking bromide mixture, you may say. He did nothing of the kind. All he did was to start reading my plant chemistry notes and Lo! what did I find! In a trice he was snoring and snoring terribly. Yesterday I received a letter from him and he says that my notes are a wonderful panacea to sleeplessness. "Why even the baby stopped crying and slept soundly when I started reading the notes aloud", he says. A glorious tribute to plant chemistry no doubt, but one, I can say at which Physiological chemists will start.

"Hail Kumbakarna,
May his tribe increase!"

U. Sumitra Rao. B. Sc., Class III.

Blue Book of the Hostel

THE Hostel is a combination of the most varied and unrelated elements. Amidst all the bewildering details,—an account of which I have herein given,—it is a system with unity in all its diversity. I came as a welcome friend into this cosmos of the heterogeneous.

When the dreams of youth are not yet at an end, the College life is as good as being buried alive for the long span of three years, understanding what we can, swallowing what we cannot. We are all ears and no tongue, grave as owls, never smiling, never joking. But, once out of the portals of the College, our innate fascination for all things of the vagabond order is at large.

Hostel life has thus greater attractions. To return and find that our room had been visited by a typhoon, to behold our mirror with the contents of a full tube of Neem tooth-paste smeared all over it, and the boot-polish in the pomade or snow bottle, to discover some hideous figure reposing with ease on our bed, to find our black shoes meticulously polished with ox-blood or vice-versa,—or to find all our belongings labelled at 'sale prices' and hung up in the room to represent a shop in a by-lane dealing in second hand goods,—these are just and mild jokes at which we are compelled to laugh at if we could, and weep over if we could not. Locks prove useless when hammers and files and screw-drivers are about. The poor electrician is always kept busy repairing burnt fuses, the culprit however invariably remaining anonymous.

The cynical world looks upon us as Bohemians. We are not bothered about it ; we go our way, with perfect ease, undisturbed, and care two pin's heads, for anyone. The tempo of our age has quickened to a pace, which makes 'thinking for the morrow a tedium. Still our philosophy in a nut-shell is this ! ' The world is so, full of a number of things. We are sure we should be happy as Kings'. Perhaps, our opinions rarely (or never?) tally with the rest of the material world. Happy are we who are growing up and growing get used to our own life.

A lot of bunk has been said and unsaid about our Hostel politics If a stranger who does not know our ways were to hear us talk, he would think us awful fellows. The language ! in a court of Law—they would nearly hang us for it. But as I see it and know it, our politics are more elementary, less purely political than that. In theory, we are out-and-out socialists ; but in practice, we want silk pyjamas, superlative soaps, manicure sets and toilet requisites of an ultra blonde. Perhaps with some, socialism is a hobby.

Geniuses,—people who make history are not rare among us. But idiots of the superlative best, who stand at the other extreme of humanity, are not wanting. There is a perpetual race to do a supremely silly thing going on, for his name will take the precedence of every

other for a day or two ; and he counts on a large return in publicity. At an absurd statement from an absurd student, we all roar with uncontrolable laughter which sweeps away all other considerations. There are people who would do almost anything to get into the news. The lure of notoriety exploits the human frailty and they do almost anything. This, often in the long run does mere harm to manners and morals. I speak with a feeling, because it seems that this sensation is a poison which saps both decency and intelligence and is deadly insidious. The reason is not far to seek. This desire is latent to a lesser or greater degree in most of us, like the desire to fall in love or to peer into an automobile. It is not strange that an average man of no great parts, is susceptible to this temptation. Some of the world's greatest and strongest minds have done no better. Is it not Garibaldi who proudly said on being outlawed with a price on his head : " It is the first time I have the pleasure of seeing my name in print".

The most enjoyable part of the day is the late evening and the hour following dinner. The glamorous hour between dusk and dark is looked forward to with a thrill. Hearken ! there our wonderful radio, thrilling one's fibres ! How glorious and immensely soothing it is to sit after our day's toil and hear the unseen music, whilst watching the blue tinged smoke drifting heavenwards into thinner air. Eternal bliss !

After dinner we divide ourselves into various groups, each party having something in common with the flock such as smoking, snuffing or chewing ; but all of us have in abundance that stimulating sense for scandal ; thus while the former is ephemeral, the latter keeps us on together. We go on in this sprightly manner till 9 p. m. and humour rocks us on and it goes from soul to soul, until the whole multitude rings out in an universal outburst. And then it ends, momentarily all of a sudden. The warden is sighted ! Silence, ominous silence prevails over us for a brief span till the warden turns his back and is at a distance out of hearing. All too soon we resume. Our talks are variously diverse. But we talk for enjoyment and not for admiration. We live so little a life of our own that other people's lives take the first place in our thoughts. Or, perhaps, we are too interested in others to be sufficiently interested in ourselves. A good deal of legitimate fun is made at the expense of our College intellectuals.

Needless to say that our discussions are promiscuous. Some profess a polite interest and dicuss with great concern about fantastic subjects like ladies' wares. We are at our best when our talk drifts on to the ' decorative sex'. The latest discussion was about the most useful finger to a lady. It was generally agreed after prolonged discussion as usual, that the ' little finger ' is the most useful, for, round it she twists her husband.

Our tete-a-tete often drifts to the problem of marriage and what kind of girl each one of us would choose to be the apple of our hearts.

Our tastes are different. But we behave with decorum and serenity and parliamentatively when such important matters are at hand. Each man's choice is voted for. If any poor fellow chooses to disagree with the majority, woe be to him; the majority wish will be forced on him, for the majority opinion is always indubitably unbiased. Thus a man of short stature will have a girl of colossal height, so that he may feel with satisfaction as if her height were added to him. But it is with dismay I observe that all of us in spite of our ardent seeking, could not pitch upon a girl correspondingly short to suit our "Tall Man" and for our "man in black" a girl all fair. All these decisions are obviously taken after deep deliberation with full cognizance that 'opposites attract each other'.

Now to more mundane and everyday affairs. Bath-room *Bhagavatars* are more numerous than people with clean chins. 'Music has charms' the monkey has said, as he rattled his tail in a jam tin. And this charm of music soothes the solitude of the bath-room. Our tunes are not those of the 'pied piper' who could upset a community, but like the music of the crow by a running stream.

If heaven is anywhere on earth, I believe it is here in the dining hall. It has no music, but is full of rhythm, which helps men loose their wits. We take the extra-ordinary chance for the true enjoyment of the little leisure. India, nay the whole world may be moribund, yet, we like John Brown's soul, go on with fun, frolic and little pranks of humour, sarcasm and wit. Thus under the small roof of the dining hall, covered with food and noisy with chatter, each man in turn narrates his little encounters, but no narrator is permitted to get to the end of anything unaided.

Thus we have an innate fascination for the vagabond order. We have that infinite capacity in abundance to go where we will and do what we please. We find a strange pleasure in herding together whether watching a match, in a cinema theatre or cycling about the streets, we are distinct by ourselves. Like the American soldier, we have the air of plenty, a sense of ease with ourselves and the world, a fund of good nature and a touch of self conciousness and modesty that is rarely absent.

And, we are not without our quarrels. They are our veritable battle fields and in these we show much of the canine in us; two dogs bark at each other, and the rest bark at them.

And for all these little frolics, we are abhorred and looked down upon with scepticism. Others are ignorant of the fact that ever since the time we acquired a sense to trace the inspired alphabet on a broken slate or sand, we have been attending school year in and year out for over two decades and from this hard drudgery at the desks, our fangled nerves and over-wrought brains, need we no escapade?

M. R. M. Punja, B. Sc. Class III.

Conundrums, Ancient and Modern

(*For Officers only*).

1. Who is the *sweetest* person in India ?

   Rao Bahadur T. S. Venkataraman, Sugar-cane Expert, because he gives us the *sweetest* canes.

2. Who is the biggest murderer in Coimbatore ?

   Mr. M. C. Cherian, the Entomologist, because he causes *death* to millions.....of insects.

3. Who is the biggest liar in Coimbatore ?

   Rao Sahib V. Ramanatha Iyer, Cotton Specialist, because he spins the longest *yarns*.

4. Who is the most *ancient* man in the College ?

   Mr. H. Shiva Rau, because he has an intimate knowledge of the *Pre-cambrian* period. (Geology).

5. Who is the most religious man in Coimbatore ?

   Rao Bahadur G. N. Rangaswami Iyengar, because he always keeps thinking of "*Sorghum*".

6. Who is the Specialist who thinks that *this College* belongs to him?

   Mr. K. M. Thomas because he is the *My-Collegist* (Mycologist).

7. Who is the strictest *disciplinarian* in the College ?

   Mr. C. Ramaswamy for he punishes, every .....ball.

8. Why is Mr. R. C. Broadfoot the *Principal* ?

   Because he takes a good deal of *interest*. (in the students)

9. Who is the biggest *glutton* in Coimbatore ?

   Mr. C. R. Sreenivasa Iyengar, Paddy Specialist because he always thinks of his *Rice*.

10. Who is the most *polite* gentleman in this College ?

    Mr. C. Narasimha Iyengar, for he is the *Civil* Engineer.

11. Who is the *brightest* man in the College ?

    Mr. M. Kanti Raj, because he is the "King of Brightness."

12. Who is the most *patient* man on earth ?

    The gentle reader, who has gone through this article completely!

G. V. Chellappa B. Sc., III

Rev. Henry Ward Beecher's Farm

MR. BEECHER'S farm consists of thirty six acres and is carried on on strict scientific principles. He never puts in any part of a crop without consulting his book. He ploughs, reaps, digs and sows according to the best authorities, and the authorities cost him more than the other farming implements do. As soon as the library is complete, the farm will begin to be a profitable investment.

But book-farming has its draw-backs. On one occasion, when it seemed morally certain that the hay book could not be found, and before it was found it was late,— the hay was all spoiled. Mr. Beecher raises some of the finest crops of wheat in the country, but the unfavourable difference between the cost of production and its market value, has interfered considerably with its success as a commercial enterprise.

His special weakness is hogs, however. He considers that hogs give the best return for his investments. He buys the original pig for a dollar and a half and feeds him on forty dollars' worth of corn and then sells him for about nine dollars. This is the only crop he ever makes any money on. He loses on the corn, but he makes seven dollars and a half on the hog. He does not mind this because he never expects to make anything on corn anyway. His strawberries would be a great success if the robins would eat turnips, but they won't, and hence the difficulty.

One of Mr. Beecher's most harassing difficulties in farming operations is due to the close resemblance of different sorts of seeds and plants to each other. Two years ago his foresight warned him that there was going to be a great scarcity for water melons, and therefore he put in a crop of seven acres of that fruit. But when they came up they turned out to be pumpkins, and he could not persuade any to buy his pumpkins. Sometimes, a portion of his crop goes into the ground, as the most promising sweet-potatoes and comes up in the form of the most execrable carrots.

When he bought his farm he found one egg in every hen's nest. He said that was just the reason why so many farmers failed—they scattered their forces too much—concentration was the idea. So he gathered those eggs together, and put them all under one experienced hen. That hen roosted over the contract, night and day for many Weeks under Mr. Beecher's personal supervision, but she could not "phase" those eggs. Why ? Because they were those shameful porcelain things which are used by modern farmers as "Nest eggs".

Mr. Beecher's farm is a triumph. It would be easier if he worked it on shares with some one. But he cannot find anybody who is willing to stand half the expenses and there are not many that are able. Still persistence, in any cause, is bound to succeed. He was a very inferior farmer when he first began, but a prolonged and unflinching assault upon his agricultural difficulties has had its effect at last, and he is now just rising from affluence to poverty.

S. N. Ramasubramanyan, B. Sc. Class II.

Wise and Otherwise.

The warden wonders why he is never able to see Sumitra Rao and Raghavalu in their rooms. Evidently, sir, you do not go equipped with the microscope and schultze solution.

Ramana Rao tells us that there was IDLI-CONSUMING competition in the Andhra Mess. Well, Rao, who came second?

Punja wants us to fetch a purchaser for his bike. It is quite an easy thing Mr. Club Secretary; there is great demand for scrap iron now-a-days.

K. Narayana Rao asks us why we put on a funeral look whenever he sings. To tell you the truth Mr. Games Secretary, your singing reminds us of a pet-dog that died recently.

T. D. Muthuswami doubts whether he will ever be able to get into the third court. My dear chap, Rome was not built in a day and remember it is not even 3 years since you began Tennis.

Mr. G. N. R. maintains that work should be a pleasure. It is a pleasure which a good many students like to deny themselves.

* * * *

We owe a great deal to Science, says a professor. Having just received the final reminder about electric bill, we agree.

* * * *

" Songs which Veeraghavan sang at Pattambi, haunt us still " says Narayana Reddi. They should, verily he has murdered them.

* * * *

" Read forget, read forget and read ", This is the way to master Chemistry says Mr. H. Shiva Rao. Well Sir, the whole trouble with us, poor students, is that this study-cycle gets broken at the " Forget " point. (U. S. R.)

An Election Reflex.

JULY 20th was the day chosen for the elections. The previous night, need I say, the hostel was bustling with activity. There were canvassings, requests and even threats for votes. One of the candidates gave an extensive, eloquent and forcible election speech at the Hyde Park. All the while I was in my room busy combating with my books and sleep. Naturally the latter got the upper hand and there I was sleeping with my light on.

I don't know when exactly I woke up—but the moment I did so, I heard the election speech. When it was over there was one thing which was ringing in my ears—the election promises. The candidate was trying his utmost to make out that he would do this and that. He added that all this was not mere talk, and the voters would realise the validity of his statements immediately he was declared elected.

I promised my vote to every one that approached me for it. I well know that it was the best means of enjoying sumptuous teas that will be given by successful candidates. How can any one know who exactly got my vote when it is a secret ballot? What with a dashing game of Ring Tennis in the evening, and to add to it, witnessing a Chess match, I was thoroughly exhausted. In addition I had listened to the Radio.

All these made me fall sound asleep. Sound? I think I am wrong. A sleep interposed with dreams can never be called sound. Do you deem Eddie Cantor's Sleep in 'Ali Baba goes to Town,' a sound one? I know you don't. Leaving this alone, I should like to narrate to you my dream:

There were three candidates standing for election. One of them withdrew from the contest on the day prior to the elections. The seat contested for was for the Wardenship! Are you taken aback? This is democracy at its best. The Warden for a professional College to be elected by the students from among the students—ultra modern! H. G. Wells in spite of himself has not foreshadowed this in his "Things to come". I am sorry to have withheld the news that I was one of the two remaining candidates. My rival began his speech first and was up for full 60 minutes. The effect was really very great. Every moment the audience was becoming thin and actually when I was to make my speech I had a handful to address. Consequently mine was an easy job. I give my speech below:—

'I am addressing you directly and in a very familiar tone. I promise you to be your guide, poet, artist, philosopher and what not, the moment you elect me. You will exercise your prudence and vote for the really deserving. The following shall be my election

manifesto:—My first reform will be the construction of more bath rooms and latrines. I need not tell you how much we are in need of these, (cheers). Secondly. I will see that you are allowed to go on cycles at least to the wet lands (more cheers). Thirdly, to give an innovation to the monotony of Scientific subjects I will make arrangements to see some literary subjects are introduced. After very great consideration I have come to the conclusion that the introduction of English Music and Indian Dance will greatly amuse you. These are but a few of the good many things that I mean doing during my regime. I thank you gentlemen for your patient hearing and I conclude my speech with an appeal for your votes.'

I had some tense moments before the election results were announced. But when they were, what joy was there at my heart to see my name put against the Wardenship I had won by a margin of 13 votes. Is this number the so called unlucky number of the many, my lucky number!

There was profuse garlanding and profound congratulations. Why, there was a pompous procession round the hostel and round the maidan. I thanked them for having chosen me as their rightful guardian. There were clappings.

Clappings—I am sorry—tappings at my door. Then did I know that my neighbour was knocking at my door to take me to the elections. What a dream. I went in haste and excercised my vote. But to whomsoever I gave it, he did not succeed.

C. S. Krishnamurty, B. Sc. Class III.

The Mystery of the Crimson Trail.

(Boys below 19 are warned against reading this story. Those doing so do it at their own risk, The editor cannot be held responsible for any calamity to the weak hearted on reading this story--Ed.)

It was on the 18th of January 1926 just outside Secunderabad that this incident took place, and it was the greatest adventure I had ever had.

If I am not mistaken, I think I was in the I Form. I was young and innocent those days, though my teachers and my parents thought otherwise.

I had just then entered the stage of reading detective stories and very soon, detective novels became an obsession with me. I would read all such novels I could lay my hands on. Money given to me for buying pencils, rubber and note books by my dad, went towards buying two-penny Sexton Blake series. There were only two places where I could read these peacefully. One was the bath-room, and the other, the Tamil Pandit's class. It soon came to be known that I wasn't actually using a lot of rubber and pencils and note books as all that. But I know that I was still crazy about detective stories because I haven't forgotten the terrific kick I received on my pants for stealing the school bully's novel.

I was a particularly happy lad that month because I was the proud owner of a brand new hockey stick that my father presented me with for X'mas. Besides enabling me to play hockey, it was useful to me as a weapon of defence againt my younger brothers and I was happier still about it.

My old man was reading a book on "How to bring up children" in spite of his experience. It said, "encourage your little son to play games. That will keep him away from detective novels". That is why he bought that wonderful hockey stick for me. A pity, I did not know this malicious motive of his.

I think the old man was very clever, because I actually forgot Sexton Blake and played hockey during school hours and other hours, in the kitchen and in the office room.

Being school time, on the 18th January 1926, I did not play in the kitchen, but on a maidan not far away from home and just outside the town limits. This was a lovely, lonely place, a perfect rendezvous for all my friends who were also of similar inclinations. I heard the other day that they are also at present reading that very book which my dad used to read when I was young and innocent—"How to bring up children" by Dr. Hopkins, Consulting Psychologist, California.

Having played hockey almost the whole day without any half time, I was tired by about 5-30 and was returning slowly to be at home before street lighting time, at which time my father reads the muster register for all his children.

I had gone 65 yards or rather 66 yards to be more accurate, when Ismail shouted out "Come and look at this blood here". Sure enough it was blood and sure enough I forgot about that roll call at home at lighting time.

I was a keen scout and a keener amateur detective. The sight of blood immediately fascinated me. All my detective craze was trying to express itself.

Like a true detective I cleared the area and took stock of the circumstantial evidence—a trail of fresh blood between a pair of iron wheel tracks near an unused well.

"Perhaps an unhappy traveller was robbed by a bandit, beaten, put in a cart and dumped into that well. What agony the poor fellow must have undergone" I said to myself. "Perhaps the man's life is still lingering. Why not try to save the unhappy wretch? The scout Association might present me with a medal for it and the police will give me a reward for information leading to the arrest of a notorious criminal for murder".

My friends also were eager to solve the mystery because they were also keen about the medal and the reward.

Strangely enough, the trail did not lead us to the un-used well as we had surmised. So we divided up into two squads, one squad following the blood drops in one direction and the other in the opposite direction.

We were all tired with walking, the light was fading, our hunger ever increasing. We were beginning to despair. The trail at last led us into a big building with zinc sheet roof and a big sign board outside. Over the house a large number of crows and vultures were hovering. " Here lives the murderer " I said to myself. Immediately I wanted to take down the name of the occupant to report to the police. On the board was written " The Corporation Slaughter House '. Nearby stood the cart, I was looking for, smeared with blood. I wished that some one would drop bombs on this building. We were an unhappy lot returning home late that night disappointed, disillusioned and tired. My friends and I thought of murdering Ismail for showing us the blood of slaughtered animals.

The next day we went to school to compare notes with the other squad who had gone in the opposite direction. They had the same experience as ourselves, in a different building. But on the board they read " The Corporation Blood Manure Factory ". On return that night they too had met their angry fathers and sympathising mothers.

It is fourteen years since this happened. But believe me it has had a very salutory effect on me. I hate scouting now; I never play hockey though I still enjoy watching it, and I hate nothing more than reading detective stories.

G. V. Chellappa, B. Sc., Class III

On Snoring

AFTER pondering for three days I come to the conclusion that after all snorers are the best enjoyers of sleep. 'I snored away the whole day' that is what one says when one means that one had a very enjoyable sleep, on say a holiday. Look at the snorer as he makes that rythmic *gur gur* sound, his hands, and legs stretched wide apart, his mouth agape and his plump little belly making what is commonly known as a simple harmonic motion. How careful he looks—his relaxed expression suggesting an exquisite pleasure within and a quiet serenity without. But look at this sleeper, his limbs close together and his eyes held tight giving out the very suggestion of 'Disturb me not or else I will be offended.' Last year, in our Hostel, there was one poor chap Shesha by name whose habit it was to sleep very early. But unfortunately for him he didn't belong to the class of snorers. So his friends argued that he really was'nt asleep and that he was only feigning. No sooner did Shesha sleep than a piece of poetry escaped every mouth, "Early to bed and early to rise makes Shesha a happy, healthy and contended chap." Poor man. If only he had been a snorer!

Snorers, I said, are the best enjoyers of sleep at least for the simple reason that sometimes they happen to rob that very same delight from others. Last summer there turned up in our house a gentleman, who, I want you to understand was to us a guest of no mean importance. Of course he was received with much eagerness and when bed time arrived he said 'Not particular about anything like bedding but just some breeze (moving air) is all I want'. So my room was pitched upon and I was to take the guest. He stretched himself on a little carpet near the window and for half a dozen times or so exclaimed 'How hot it is!' Then he drifted into a long talk, for, snorers, as I know them, are nine out of ten, terrible talkers. He talked and talked and did not mind much whether I was listening or not. I was feeling very drowsy and the last question I remember his asking me or rather himself was, why we cannot consider Mr. Gandhi to be a Muhammadan. He paused here expecting me to enlighten him on this point. But a suitable answer being difficult to be imagined I pretended that I was fast asleep soon after and began to dream terrible dreams. A hundred dogs were snarling at each other and pulling each others' tails. I woke up and to my great relief found that all this snarling was nothing but the snoring of my guest at the top of his breath. He was making a variety of noises-at one time comparable to the snarling of a dog and then suddenly changing to the roaring of an automobile. For sometime I listened with deep interest and then closed my eyes. But I could not get a wink of sleep although I rolled listlessly for three hours and more. I tried myself to fancy

that all this noise was ony melodious music and that I was being sung to sleep by a mysterious singer. But my imagination was too poor to swallow anything of this kind. Again I tried to think that I was travelling in a train but with little avail. I blocked my ears with my hands but this only served to amplify the loudness of the noise. The clock struck four. I jumped up from my bed and went out realising that here was an opportunity for me to see the Sun rise.

P. Ananthakrishna Rao, B. Sc., Class I.

Is it a Fact ?

That at Cape Camorin Janab Md. Sulaiman began comparing and contrasting the boisterous seas of the other places with the calm one at the Cape.

That when he was at the height of his oration, that the cat was let out of the bag by Mr. Chettiar giving out the fact that the learned orator, was just seeing the sea for the first time in his life.

* * * *

That Punja was seen practising some Bharat Natyam poses in his room.

That it later came to be known, that he was not practising any dance poses, but that somebody had just trampled on his wounded foot.

* * * *

That under the able guidance of Meenakshisundaram, Santhana-Raman reared a millipede for two months taking it for a catterpillar.

* * * *

That during the debate of the 26th October '39, many students had gone well prepared to make " extempore speeches."

That the President did not give them an opportunity to speak and that one of them was so disappointed as to be murderously inclined the whole day.

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That some of the speakers took it into their head that the meeting was a 'Pugilist display' and that the President was in constant dread of having her spectacles knocked out by one of the speakers.

* * * *

That the residents of the orphanage (15th Block) have approached the Warden for the provision of a lavatory for the Block and that a bore-hole is likely to be sanctioned and that Mr. S. of class II has been deputed to the boring.

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That Mr. Kantiraj mistook Mr. Upadyayalu's hand-writing for a " seismographic record."

* * * *

That a tour-programme for the II years, has been drawn up and that the chief places included are

Marudamalais--Hill station.
Pujaripalayam—Chola village etc.

* * * *

That the Club Secretary is intending to subscribe for a special copy of the "HINDU" for R. Shetty so that the other members of the Club may have a chance of seeing the paper.

* * * *

That the Tennis representative R. Veeraraghavan intends using tennis nets made of coconut fibre as an expression of his insular patriotism.

* * * *

That Sreshta is going to deliver a lecture on "punctuality" and that G. Raghavalu has kindly consented to preside and that the students have been asked to be in time for the meeting.

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That the construction of the new club buildings is going on vigorously unseen by others, with a view to avoid the 'evil eye'.

* * * *

That Maduram collects film posters as a compensation for not attending any cinema theatres.

* * * *

That K. S. Suryanarayana fell on a girl while going to cinema on Ramalingam's cycle?

* * * *

That C. Sankara Rao sings beautifully when all go to seelp?

* * * *

That H. Gurubassapa mistook Nageswara Rao's leg to a cholam plant and cut his leg while harvesting cholam?

* * * *

That Jagannadha Rao toilettes only four times a day?

* * * *

That K. V. S. Suryanarayana Murthy left playing tennis from the time he was defeated by George Madhuram?

Editorial Comments.

(By the Tatler Editor)

Saturday Classes.

The introduction of Saturday classes has evoked the greatest concern in student circles. Of course it could not have been otherwise. Saturday, was the best day of the week, both to the Bohemian and the studious among the student community, and this encroachment on the well-earned week-end holiday has robbed both categories of students of their happiest day. We do not mean to say that a student of Agriculture is over-worked, but we dare not say that he gets adequate rest, especially after this new introduction. The Sunday passes off in a trice and we wonder whether the student will ever be able to attend the Monday classes, as much refreshed as he used to be previously.

To the studious man it means the complete negation of the library facilities in the Research Institute. Saturday was the only day when one could hope to go to the Research Library and read one's quota of extra books. View it, as we may, from whatever angle, this innovation completely baffles us as regards its utility. No wonder, the students are not jubilant over the Saturday classes.

The Editor Replies.

R. Shetty :— Sir,

On the 4th Nov. some of the students of our college were called for an interview by our Principal. Has this interview anything in common with the Viceregal interview ?

Editor :— No. It has absolutely nothing to do with it. The students were called just to consider, how best to meet the impending Dec. exam-crisis.

Anonymous Class I — I hear that Mr. Ananthakrishna Rao is a very slow eater. How much time does he take to eat his Mid-day meal ?

Editor :— Well, Sir, I can't tell you the exact time he takes. Anyway if you are so inquisitive and have enough patience, you had better go to the Malabar Mess at 11-30 A. M. and observe. But don't forget to bring the following things with you.

1. One-up-to-date calendar 1940 to guage time.
2. An easy chair to seat yourself comfortably.
3. Two or three **Edgar Wallace's** Novels to read during the period.
4. One kettle of coffee to keep you awake during the travail of waiting.

R. V. S. :— Sir,

I would like to know whether Mr. G. V. Chellappa was ever a Post-man ?

Editor :— Do you mean to say that every body that wears a Khaki suit has something todo with the Postal Dept.? Don't ask silly questions.

* * *

T. K. Rao :— Will you kindly let me know the date on which Mr. Sulaiman was elected as class rep.

Editor :— Was he elected at all ?

* * *

Dindigul Wala : Why did Mr. K. S. Ramaswami resign the post of the General Mess Representativeship ?

Editor :— Are you aware of the resignation of Mr. C. R. ? This might be a case of sympathetic resignation.

* * *

E. V. J. :— When I think of the future of the B. Sc. (Ag.)s I become despondent.

Editor :— There is absolutely no reason for such a despondency. A scheme is already pending with the I. C. A. R. to start a colony of Agricultural graduates in Sahara.

* * *

G. V. C. :— What is the mother-tongue of Mr. Veeraraghavan?

Editor :— It is a problem that has defied many an expert linguist. When he speaks Malayalam, Malayalees take it for Tamil ; Tamilians think it is Malayalam.

A. R :— Mr. Reddiar of Class I says that he has read Shakespeare's ' Sherlock Holmes ' series. Have you also read it ?

Editor :— I haven't. But, any way. ask Mr. Reddiar whether he has read " Scot's Emulsion " also.

* * *

Gokhale :— Why is Mr. G. V. Chellappa still in the 4th Court ?

Editor :— Because there is no 5th Court.

Thiagaram :— We are feeling much handicapped by not being allowed to go on bykes to College. Suggest something instead that would not go against the rules.

Editor :— " The Hindu " has advertised that there are some elephants for sale. Why not you buy one ?

Mahimi Dass :— When is the Hockey field getting ready ?

Editor :— At the rate at which the repairs are going on, it will be ready by August 19th 1959 at 2-30 in the afternoon according to our fastidious mathematician.

Students' Annual Club Day Celebrations.

The Annual Club Day was celebrated on Saturday the 24th of February 1940 with great interest and enthusiasm. It was a day of triumph, merriment and unalloyed happiness to one and all the students. The sports and tournaments connected with it were concluded prior to the Club day. The happy function commenced with 'Tea' at 4 P. M. as usual. The fancy dress competition provided great amusement to the visitors. After 'Tea' the guests and the students adjourned to the tastefully decorated Freeman Hall, where a meeting was held with Sri. N. Chandrashekara Ayyar, B. A., B. L., District and Sessions Judge, Salem in the chair. Student P. Paramananda Panda is to be congratulated for the simple, exquisite and artistic way in which he decorated the hall.

After reading of the reports of literary and games Sections for the year 1939-40, by the respective secretaries, prizes were distributed by the President to successful candidates. This was followed by a variety Entertainment which included the following interesting items, which were greatly appreciated.

1. The opening chorus. (2) The college Rag. (3) Instrumental music. (4) "Examinership conferred" A farce in English. (5) Magic and feats of strength. (6) Indian songs and (7) A scene from S. Kanara field drama.

The pleasant function terminated with the presidential address followed by a vote of thanks by Mr. R. C. Broadfoot, Principal of the College.

The following is the list of prize winners in various events held in connection with the Club day.

Indoor games.

	Winner.	*Runner up.*
Table Tennis singles.	K. Narayana Rao.	D. Narasimhamurthy.
„ „ doubles.	R. Veeraraghavan & Satyanadhan.	Sommanna & Narayana Rao.
Carrom Singles.	K. Narayana Rao	Monappa Hegde.
„ doubles.	S. V. Srinivasan & Panda.	K. V. S. N. Murthy & Narayana Rao
Chess.	B. S. Krishnan	A. G. Kesava Reddy.
Draughts.	Noel Sreshta	M. Ramiah.
Blow Ball	Kovlutlayyas' team.	

Sports.

Tennikoit singles.	Ramakanta Reddy	Md. Sulaiman.
„ doubles.	Ramakanta Reddy & Sanyasi Rao	B. L. Gunapragasam & Md. Sulaiman.
Volley Ball (6)	Ramiah's team.	
Volley Ball (9)	Veeraraghavan's team.	
Badminton doubles	R. Veeraraghavan & P. Venkateswara Rao.	B. Padmanabha Raju & A. Subba Raju.
„ Fives	R. Veeraraghavan's team.	
Tennis singles.	R. Veeraraghavan	M. R. Mohan Punja.
doubles.	R. Veeraraghavan & K. Bhakaram.	Chintamani & Narayana Rao.

Ringing the stump :— 1. Md. Ibrahim 2 Fazlullah Khan.
3 legged race :— 1. Daniel Sunder Rajan & Satyanadhan 2. Narasimhamurthy and Hanumantha Rao.
Bowling at the stumps :— 1. S. V. Srinivasan. 2. G. H. Madhuram.
Kicking the foot Ball :— 1. George, C. M. 2. Kamalakaran.
Scooping the hockey Ball :— 1. S. V. Srinivasan, 2. S. N. Ramasubramanian.
Tailing the elephant :— 1. V C. Upadhyayulu. 2. Sivasubramanian,
Musical chair on cycles :— 1. Md, Baig, 2. Noel Sreshta.
Running back :— Mohan Punja, 2. Keshava Reddy.
Slow cycle race :— 1. Rama Mohan Rao, 2, Azariah.

Inter tutorial competitions :—

Krishnamurthy Rao Memorial Hockey cup :— Sri. C. R. Srinivasa Ayyangar's Wards.
Rao Sahib V. Muthuswami Iyer's Foot Ball shield —Sri. C. Narasimha Ayyangar's wards,
Rao Bahadur C. Tadulingam Mudaliar Cricket Cup— Sri. C. R. Srinivasa Ayyangar's Wards.
C. Ramaswami Elocution Cup—Sri. C. N, Narasimha Ayyangar's Wards.

Inter class matches:—

Parnel Cup Class III
Victory Cup Class II.

Literary competition :—Essay writing:— 1. K. Narayana Rao, 2. Seshavtharam. G. V. Chellapa.

Elocution competition :— 1. Md. Baig, 2. Gurubasapa, 3. C. Upadhyayulu.

Colours were awarded to:— Tennis:—nil. Hocky-Daniel Sundera Raj. 2. Azariah, 3 Mohan Punja. Foot-Ball— 1. Ramakanta Reddy, 2. Gnanapragasam. Cricket:— 1. K. M. Somanna. 1. Athletics. 1. M. R. Mohan Punja, 2. R. Veeraraghavan.

The Parlakimidi Cup:— Awarded to the all round sportsman of the year— R. Veeraraghavan.

Special cup for the best student artist— P. Paramananda Panda.

Agricultural College and Research Institute, Coimbatore.

Additions to the Library during the Quarter Ending 31st March 1940.

A. Books.

1. *Agriculture in the Twentieth Century.* Essays presented to Daniel Hall. (1939). 2. *Geomorphology.* Lobeck, A. K. (1939). 3. *Fertilizers in Modern Agriculture.* Russell, E. J. (1939). 4 *Proceedings of the Joint Meeting of the Standing Sub Committee on Field Experiments.* I. C. A. R. Pub. (1939). 5. *Research on Relationships of weather to crop yields.* Barle, C. F. and others. (1938). 6. *Indian Agricultural Statistics.* An Introductory Study. Thomas, P. J. (1939). 7. *The Origin of Indian corn and its Relations.* Wangelsdorf, P. C. and Reevas, R. C. (1939). 8. *Cotton Trade Markets.* Venkateswaran, S. (1939). 9. *Hedges, Screens and Windbreaks.* Their uses, selections and care. Wyman, D. (1938). 10. *Cost of Production of Citrus Fruits.* Data from Studies in California and Florida. 1930–1937. Rawthern, S. N. (1938). 11. *Regulations in Respect of the Export of Citrus Fruit.* Union of South Africa Govt. Pub. (1938). 12. *The Citrus Industry of Palastine.* Haxon, N. W. (1938). 13. *The Weeds of South Africa.* Phillips, S. P. (1938). 14. *Report on the Marketing of Eggs in the Madras Presidency.* Gopalakrishna Raju, K. and Kunhi Kutty, M. P. (1939). 15. *Butterfat (ghee). Its composition etc.* Godbobe, N. W. and Sadagopal, N. W. (1939). 16. *Beekeeping for all,* Edwards, T. (1939). 17. *Animal Physiology.* Yapp, W. B. (1939). 18. *The Biology of cell surface.* Just, E. N. (1939). 19. *An Introduction to Botany.* Priestly, J. R. and Scott, L. I. (1938). 20. *Data on the Movements and Activities of Swarms of the Desert Locust in the northern and central parts of India from 1912–1931.* Govt. of India Pub. (1939). 21. *Principles of Mechanism.* Dyson, F. (1939). 22. *Modern Ideal Homes for India.* Deshpande, R. S. 23. *Principles of Economics.* 4th Edn. Revd. Vol. 1 Tanssig. F. W. (1939). 24 *Mathematical Analysis for Economists.* Allen, R. G, D. (1938). 25. *Indian Economics.* 6th Edn. Revd. Jathar, G. B. and Bai. S. G. (1939).,

B. Reports etc.

1. Madras Agricultural Department, Admininistration Report for 1938–39. 2. Madras Agricultural Department, Subordinate Officers Report for 1938—39. 3. Madras Agricultural Department, Detailed Report of the Agricultural Chemist, Entomologist and Mycologist 1938–39. 4. *India,* Imperial Council of Agricultural Research, Annual Report for 1938–39. 5. Bihar Agri. Dept. Annual Rep. 1937–38. 6. Punjab Agri. Dept. Annual Rep. 1937–38. 7. Burma Agri. Dept. Annual Rep. 1938–39. 8. Central Provinces and Berar Agri. Dept. Report on the Demonstration work in the western circle 1938–39. 9. Madras Department of Industries and Commerce—Administration Report 1938–39 10. *England,* Rothamsted Exp. Stn. Annual Report for 1938. 11. Ceylon, Agricultural Department. Administration Report for 1938. 12. Minnesota, Agri. Experiment Station. Annual Report for 1937–38. 12. Storrs, Agricultural Experiment Station, Annual Report for 1937. 14. Texas, Agricultural Experiment Station. Annual Report, for 1938.

UNIVERSITY OF MADRAS

B. Sc. (Agriculture) Degree Examination, 1940,

FIRST EXAMINATION

AGRICULTURE

Monday, 1st April. 7 A. M. to 10 A. M.

Maximum: 60 marks

Answer Six questions. Questions 1 and 7 are compulsory.

1. State how air movements arise. What are the effects of the North-East Monsoon on dry and garden land farming in Coimbatore district [12 marks.]

2. Describe the methods which a farmer should adopt to secure the maximum benefits of the rainfall of the tract. [9 marks.]

3. Enumerate the agencies responsible for the formation of (*a*) laterite soils and (*b*) alluvial soils and briefly describe their action. [9 marks.]

4 In a farm located in a black soil tract a rainfall of 4 inches is received in the first week of August. What crops could be grown after that and what are the preparatory cultivations that should be done before sowing? [9 marks.]

5. State the effect of the following operations on alkaline soils under garden land conditions:—(*a*) Ploughing with Cooper 26 plough after 2 inches of rain. (*b*) Applying 20,000 lbs. of wild indigo crop. (*c*) Sowing cotton in lines one day after 1 inch of rain. What will be the effects of the above operations on red loamy soil under dry land conditions? [9 marks.]

6. Describe briefly with sketches a junior hoe. What are the uses to which a junior hoe can be put? [9 marks.]

7. Explain how a tobacco nursery should be raised? What operations should be carried out in the main field before tobacco seedlings are transplanted and how are the seedlings planted? [12 marks.]

8. Write short notes on:—(*a*) Cumulo-nimbus, (*b*) Soil pan, (*c*) Chain harrow, (*d*) Water spouts, (*e*) Coulter. [9 marks.]

BOTANY

Tuesday, 2nd April. 7 A. M. to 10 A. M.

Maximum: 60 marks.

Answer six questions. Questions 3 and 6 are compulsory.

1. State exactly what part the cotyledon plays in the seedling stage in the following plants:—Lablab, Bengal gram, Castor, Maize, Date, Coconut. Draw figures to illustrate your answer. [9 marks.]

2. Mention the different modes of leaf arrangement seen in plants. What conclusions do you draw from them? [9 marks.]

3. Give a full account of the family Cucurbitaceae including there in (*a*) the morphology of the special parts; (*b*) histological peculiarities; (*c*) systematic position; and (*d*) economic importance of the family. [12 marks.]

4. Explain with diagrams the characteristic structures of the following and state where each may be found:—Cellenchyma, stone cells, aleurone layer, cystolith, lenticel. [9 marks.]

5. Show by means of clear sketches the structure and appearance of medullary rays as seen in the transverse, longitudinal and tangential sections of woody dicotyledonous stems. What purpose do the rays serve? [9 marks.]

6. Explain as fully as you can how water is absorbed from the soil by land plants, how and through what channels it is conducted and how it is utilised and disposed off. [12 marks.]

7. Write a short essay on the special methods of nutrition adopted by plants other than fungi giving examples. [9 marks.]

8. What is the composition of chlorophyll? How can it be extracted from leaves? What are its properties? [9 marks.]

CHEMISTRY

Wednesday, 3rd April. 7 A. M. to 10 A. M.

Maximum: 60 marks.

Answer six questions. Questions 4 and 8 are compulsory

1. Starting from acetic acid how would you prepare Ethylamine? Enumerate its properties. Describe the test by which it is identified. [9 marks.]

2. What is Glycerol? Describe briefly the process of its manufacture on a commercial scale. Mention its chief properties. [9 marks.]

3. An organic substance of an unknown composition is given to you. Mention the steps involved in the process of determination of its constitution. [9 marks.]

4. 0·1511 gram of a substance gave 0·3057 carbon dioxide and 0·1409 gram of water. By the Kjeldal method 0·5622 grams required 6·16 c. c. s. of normal H_2SO_4 for neutralization of ammonia. Find the empirical formula. If the vapour density of the substance is 87 what is the molecular formula of the substance?

1 c. c. of normal H_2SO_4 = 0·014 grams of nitrogen. [12 marks.]

5. How is chloroform prepared? What are its chief properties? How would you proceed to determine its constitution? [9 marks.]

6. Explain the terms primary, secondary and tertiary as applied to alcohols and give two examples of each class. How do primary, secondary and tertiary alcohols differ from one another in their behaviour on oxidation? [9 marks]

7. How would you convert Benzene into Aniline? Mention the chief properties of Aniline. [9 marke.]

8. How is naphthalene prepared on a commercial scale? What is the formula for naphthalene and upon what evidence is it based? [12 marks.]

ZOOLOGY

Thursday, 4th April. 7 A. M. to 10 A. M.

Maximum: 60 marks

Answer six questions. Questions 4 and 6 are compulsory.

1. Explain the terms 'tissues' and 'organs'. Describe the types of organization in animals. [9 marks.]

2. What is the purpose of a skeleton in an animal body? Describe the nature of the skeleton in the following forms:— (*a*) Sponge, (*b*) Precious coral, (*c*) Grasshopper, (*d*) Sea-urchin and (*e*) Frog. [9 marks]

3. How do Nematodes differ from other worms? Describe briefly the structure and life-history of any Nematode parasite you have studied. [9 marks.]

4. State clearly the Zoological position of 'Aves'. Classify and give an account of the economic importance of the group. [12 marks.]

5. Give a comparative account of the structures connected with flight in an insect, a bird and a bat. [9 marks.]

6. 'The mouthparts of different insects vary very considerably.' Substantiate this statement giving suitable examples and sketches. [12 marks.]

7. Prepare a list of the nonhexapod invertebrate animals commonly found in a typical garden land stating the economic importance, if any, of each. [9 marks.]

8. Write short notes on:— (*a*) Hermit crab, (*b*) Amnion, (*c*) Glomerulus, (*d*) Archenteron, (*e*) Biogenetic law, (*f*) Hormones. [9 marks.]

SECOND EXAMINATION

AGRICULTURE. PLANT HUSBANDRY. I

Monday, 1st April 7 A. M. to 10 A. M.

Maximum : 100 marks.

Answer six questions. Questions 1 and 7 are compulsory.

1. Name the manures and raw materials useful for preparing manures that are exported from India and give suggestions for making them available to Indian ryots at economic prices. [18 marks]

2 Differentiate between natural fertility and added fertility of a soil. What should be the understanding between landlords and their tenants in the maintenance of soil fertility ? [16 marks]

3. Name the green manure crops that are grown in different parts of the Presidency and discuss their suitability to different soils and cropping and other conditions prevailing in the tracts. [16 marks]

4. Name the important varieties of cotton that are grown in the Madras Presidency and the Agricultural stations devoted to their improvement. Name some of the improved strains popular in different tracts. [16 marks]

5. Write short notes on:— CO 419, G. E. B, 24, E. C. 593, A. S. 29, Co. 413, A. H. 25, Great Scot. [16 marks]

6. Why is the field register an important record in an Agricultural Research Station ? Give a sketch of the record showing the useful headings. [16 marks]

7. What do you understand by the expression ' unexhausted value of manures ' ? Name some manures which have such a value. State the manurial requirements of a garden land farm of 5 acres in the Coimbatore District in which one acre is allotted to vegetables. [18 marks]

8. Classify briefly the main soil types of the Madras Presidency. Describe in detail the soils of the Periyar irrigated tract. [16 marks.]

AGRICULTURE. PLANT HUSBANDRY. II

Tuesday, 2nd April. 7 A. M. to 10 A. M.

Maximum : 100 marks.

Answer six questions. Questions 1 and 5 are compulsory.

1. Explain in detail how farm yard manure should be prepared in a wet-land village where the water table is 1 foot below ground level. What is the difference between ' long dung ' and ' short dung ' ? Under what conditions should these be applied to give the best results ? [18 marks.]

2. What are the various causes which bring about soil erosion ? Describe briefly how erosion can be prevented on (*a*) Plain, (*b*) Hills. [16 marks.]

3. A ryot has an acre of low-lying land which is water logged and alkaline. State how the land could be brought into fertile condition so that valuable crops like Paddy, Sugarcane etc. could be grown. [16 marks.]

4. What are the various improvements that you can suggest in any one of the following :— (*a*) Coconut cultivation in sandy soil, (*b*) Sugarcane in wet land, (*c*) Karunganni cotton in black cotton soil ? [16 marks.]

5. A ryot owns 5 acres of good loamy soil with a good sweet water well which supplies abundant water throughout the year in a village which is mostly inhabited by Brahmins with a big temple which consumes plenty of flowers of various kinds. What rotation of crops would you suggest in order that he may be able to supply flowers and vegetables throughout the year ? [18 marks.]

6. Explain the effect of the following operations mentioned below :— (*a*) Ploughing twice with the country plough immediately after sowing cholam

on dry lands. (*b*) Double transplanting of paddy in wet lands. (*c*) Surface planting of pineapple suckers in the West Coast. [16 marks]

7. What are the conditions under which silage making is advantageous? Describe briefly how silage could be prepared out of an acre of ragi crop. [16 marks.]

8. Describe, with suitable diagrams, a Sindewahi furnace for boiling sugarcane juice and preparing jaggery. What are the advantages of using this type of furnace? [16 marks]

AGRICULTURAL ENGINEERING

Maximum: 60 Marks.

Wednesday, 3rd April, 7 A. M. to 10 A. M.

Answer six questions only including 1 and 2 which are compulsory.

1. (a) A field *ABCD* is trapezoidal in shape; the parallel sides *AB* and *DC* measure 220 feet and 264 feet respectively; the side *AD* which is at right angles to *AB* measures 198 feet. Show by a dimensioned sketch how you would lay out 10 cent plots for experimental purposes.

(*b*) From the details furnished below of the prismatic compass survey of a four-sided field *KLMN*, evaluate its acreage correct to a cent:—

Station	Bearing	Distance in Links	Remarks
K	178°	612	*KL*
L	273°	1,053	*LM*
M	3°	625	*MN*
N	95°	1,030	*NK*

(12 marks)

2. (*a*) Define the methods of rating the powers of prime movers and describe with sketches how you would effect this by means of a transmission dynamometer.

(*b*) An oil engine is to be installed at Coimbatore for driving a centrifugal pump which has to discharge 500 gallons per minute against a total head of 66 feet. What is the B. H. P. of the engine you would order for the purpose assuming an efficiency of 60 per cent for the pump, and making an allowance of 10 per cent for overload and another 10 per cent for temperature and altitude?

(*c*) Will a single cylinder engine answering to the following description suffice for the above purpose?—Diameter of cylinder 8 inches; length of stroke 12 inches; mean effective pressure 100 lbs. per square inch; number of working strokes 145 per minute; mechanical efficiency 80 per cent. (12 marks)

3. Define the terms duty, efficiency and slip as applied to pumps and sketch in outline a Treble Ram Plunger Pump; one such is to be installed for delivering 50 gallons of water a minute against a total head of 300 feet. The pump is geared 4 to 1 and the speed of the pulley on the pump is 240 R. P. M. If the stroke is 6 inches, what should be the diameter of the barrels?

If the diameter of the pulley on the pump is 30 inches calculate the width of belt required to drive this pump assuming an efficiency of 50 per cent and that one inch width of belt transmits 1 H. P. at 1000 R. P. M. (9 marks)

4. What are the methods usually adopted for the computation of (*a*) earthwork in cutting or banking and (*b*) capacity of a tank?

How many gallons of water will a masonry storage reservoir of the following dimensions hold? Dimensions at top internally 50 feet long and 30 feet wide; the enclosing walls have a uniform internal batter of 1 in 4; the depth is 12 feet. (9 marks)

5. You are asked to prepare plans and estimates for a new road to connect a projected farm with the nearest local fund road a mile off. Describe the processes involved both in the field and in the drawing office.

Sketch a typical cross section with the following data :— Existing ground level 45·00 ; H. F. L. (1924) 48·00 ; width of formation 12 feet ; soil gravelly ; land cheap. Mark the total width of land to be acquired. (9 marks)

6. What are the laws of fluid friction ? State with reasons the cross section usually given to masonry irrigation channels. Design one such for carrying 2 cusecs at a velocity of 4 feet per second. Take $c = 96$. (9 marks)

7. Describe with sketches *either* of the following farm machines :—

(*a*) a power driven sugarcane mill with 3 rollers,

or

(*b*) a power driven double roller cotton gin. (9 marks)

8. Write short notes on :— (*a*) working steam expansively, (*b*) carburettor of a petrol engine, (*c*) impellors of turbine pumps, (*d*) soft centre steel, (*e*) designing foundations for buildings in black cotton soils. (9 marks)

AGRICULTURAL ZOOLOGY

Thursday, 4th April. 7 A. M. to 10 A. M.

Maximum : 60 marks

Answer six questions. Questions 2 and 3 are compulsory.

1. Give an account of lac cultivation in India. State briefly the important points to be observed in starting lac culture (9 marks)

2 Describe the major pests of groundnut and coconut palm in South India under the following heads ;— (*a*) Name of the pest and its family. (*b*) Distribution. (*c*) Nature and extent of damage. (*d*) Life-history. (*e*) Alternate host plants. (*f*) Control methods. (12 marks)

3. Discuss the scope of insecticidal methods of pest control under South Indian conditions. (12 marks)

4. Give instances of successful biological control of insect pests and weeds in South India. What are the factors for success in biological control ? (9 marks)

5. Mention the important characters of the orders Thysanoptera and Aphaniptera. State the economic importance of the two orders. (9 marks)

6. Tropisms will undoubtedly in the future be put to practical use in economic entomology. Discuss this statement. (9 marks)

7. Describe briefly the life-history and habits of (*a*) Paddy grasshopper, (*b*) Fruit-sucking moth, (*c*) Brinjal beetle. Show how a study of these is helpful in devising suitable control methods. (9 marks)

8. Write short notes on :— (*a*) pebrine, (*b*) trap crops, (*c*) eelworms, (*d*) psychidae, (*e*) sawflies. (9 marks)

ANIMAL HYGIENE

Friday, 5th April. 7 A. M. to 10 A. M.

Maximum : 60 marks.

Answer six questions. Questions 2 and 4 are compulsory.

1. Describe briefly the pelvis of a bullock and compare it with that of a cow. [9 marks.]

2. Draw a diagram of the alimentary canal in situ of a fowl. Name its parts and state the use of each part. What is the spleen ? Where is it situated ? Describe its function. [12 marks.]

3. Write out a prescription for a case of simple fever in a cow and state how the drugs prescribed behave in that particular case. How do you nurse this case ? [9 marks.]

4. What do you understand by epizootic and enzootic diseases ? Give an example of each. What are the means by which these diseases are conveyed to animals ? What are the general principles to be adopted to prevent the spread of infection ? [12 marks.]

5. What is yoke-gall? Name the different kinds of yoke-galls. Explain how these are caused in working cattle and describe the treatment of any of them. What precautions would you take to prevent the occurrence of such galls? [9 marks.]

6. Name some common ailments that are incidental to calves soon after birth and state how you would manage any two such cases. [9 marks.]

7. Give the causes and treatments of the following:— (*a*) watery eyes in a bullock, (*b*) occlusion of the teat canal in a she-goat, (*c*) roup in chickens. [9 marks.]

8. Write what you know about abortion in cows. [9 marks.]

FINAL EXAMINATION

AGRICULTURE—ECONOMICS AND FARM MANAGEMENT

Tuesday, 9th April. 7 A. M. to 10 A. M.

Maximum: 100 marks.

Answer six questions. Questions 1 and 6 are compulsory.

1. What is meant by an economic holding? A family of five adult members (two males and three females) with a pair of bullocks and sufficient capital want you to select an economic holding on lease in the garden land area in Salem District. Give details of the area, cropping and equipment for the holding selected by you. (18 marks)

2. It costs roughly Rs. 250 to raise a sugarcane crop of 30 tons per acre in a locality where there are independant farmers with 10 acres and small working farmers with 1 acre of sugarcane. A sugar factory offers Rs. 12 per ton of cane and market price of jaggery is Rs. 30 per candy of 500 lbs. What are your suggestions for the disposal of the crops raised by these two classes of farmers? (16 marks)

3. What is your opinion on the following prevailing systems with a view to advance agricultural progress:— (*a*) annual *versus* a permanent lease, (*b*) share *versus* a fixed money rent, (*c*) payment of wages in kind *versus* cash? (16 marks)

4. Suggest any local agricultural problem requiring investigation and draw up a scheme for conducting experiments to solve the problem. (16 marks)

5. What are the advantages of a regulated market? Have you any advice to offer to ryots in preparing their cotton and groundnut produce for sale in such a market? (16 marks)

6. What are your views regarding the establishment of farming colonies as a solution to the unemployment problem? Would you work such colonies on a co-operative or an individual basis? Give reasons for your answer. (18 marks)

7. Compare and contrast the economic life of an ordinary black soil ryot of the Ceded Districts with that of a similar ryot in the Tinnevelly area. By how much would their annual incomes differ if each owned 50 acres of dry black soil? (16 marks)

8. Write short notes on:— (*a*) Economic rent, (*b*) Non-credit societies, (*c*) Market standards, (*d*) Money crops, (*e*) Crop loans. (16 marks)

AGRICULTURE—ANIMAL HUSBANDRY

Wednesday, 10th April. 7 A. M. to 10 A. M.

Maximum: 100 marks.

Answer six questions. Questions 1 and 6 are compulsory.

1. The District Board, Coimbatore, has provided Scinde breeding bulls with good pedigrees and high reputation for milking quality for the towns of Coimbatore and Erode. Explain the objects for doing so and state how far they have succeeded in their aims. Estimate the cost of housing, feeding adequately and maintaining a breeding bull for one year. (18 marks.)

2. Criticise the practice of communal grazing. What alternative suggestions could you make to ryots who own large herds of cattle without adequate grazing areas ? (16 marks.)

3. Do you consider mixed farming suitable for the conditions prevailing in this Presidency ? Give reasons to substantiate your views. What part could sheep rearing play in mixed farming ? (16 marks.)

4. Describe in detail any cream separator which you have worked. What are the advantages of using a separator ? (16 marks.)

5. What are the points for judging good butter ? Why is butter salted ? (16 marks.)

6. A Producers' Co-operative Supply Union wishes to supply 1,000 lbs. of milk daily in a town. Calculate the cost of the equipment, establishment, transport facilities and cost of milk basing the cost on existing rates at Coimbatore. Which would you consider more economical (*a*) to own the required number of cows and run the show, (*b*) to buy milk from outside and supply ? (18 marks.)

7. Explain the principles underlying the feeding of :—(*a*) a work bullock-(*b*) one year old calf, (*c*) cow yielding 20 lbs. of milk per day. Suggest suitable rations and estimate the cost of feeding for one month a heard consisting of one pair Khangayam bullocks, two dry Scinde cows and five weaned calves under one year old ? (16 marks.)

8. Write short notes on :—(*a*) Telgony, (*b*) Compensative mating. (*c*) Artifical insemination, (*d*) Line breeding. (16 marks.)

AGRICULTURAL BOTANY, I

Thursday, 11th April. 7 A. M. to 10 A. M.

Maximum : 100 marks.

Answer six questions. Questions 3 and 6 are compulsory.

1. Enunciate two main theories about the origin of cultivated plants species and discuss their relative merits. (16 marks.)

2. Enumerate, mentioning the botanical names and families of the chief root crops grown in South India. Describe botanically the portion of the plant used for food or other purposes and explain the method of propogating the plants. (16 marks.)

3. Describe the functions of green manure crops in the Agricultural economy of this province. Name and describe botanically four green manure plants with which you are familiar making special mention of their merits and demerits (18 marks.)

4. Plan out a scheme for the improvement of any two of the following crops by the use of genetic methods :—(*a*) Ragi, (*b*) Chilli, (*c*) Pepper. (16 marks.)

5 Describe with the aid of diagrams the floral anatomy of the following crop plants and mention their methods of pollination :—(*a*) Sorghum, (*b*) Papaya (*c*) Mango, (*d*) Castor. (16 marks.)

6. Classify the genus 'Citrus' according to species and varieties, Mention the botanical and other characters by which you would distinguish them. (18 marks.)

7. What is the significance of (*a*) pruning and (*b*) top grafting in horticultural practice ? Mention one example each in which the operations can be used to advantage and describe with diagrams how the operations are carried out. (16 marks)

8. Write short notes on :— Hetero-zygote, polyploidy, lethal factor, chimera, transgressive variation, polyembryony, xerophyte. (16 marks)

AGRICULTURAL BOTANY. II

Friday 12th April. 7 A. M. to 10 A. M.

Maximum 100 marks.

Answer six questions. Questions 3 and 5 are compulsory

1. Give an account of the evolution of sex in Algae. Illustrate your answer with examples and descriptive diagrams. (16 marks.)

2. What do you understand by 'Alternation of generations'? Compare this phenomenon in Ferns with that of Angiosperms. (16 marks)

3. What are 'chromosomes'? Give a brief account of the chromosome theory of heredity (18 marks.)

4. In 'Datura', purple flower is dominant over white and spiny fruits over smooth. A purple smooth Datura crossed with a white spiny one gives 320 purple spiny and 312 purple smooth plants. If these two types of offspring are bred together, what will their offspring be like both as to appearance and gentotypes? (16 marks.)

5. What is a 'virus' disease? Mention some important crop plants affected by this disease. Describe the typical symptoms in each case and mention the various methods adopted to keep these diseases under control, (18 marks.)

6. Mention one of the most important fungus diseases affecting each of the undermentioned crops, giving typical symptoms of each, mode of spread and the control methods adopted in each case:— (*a*) Paddy, (*b*) Groundnut (c) Arecanut. (16 marks.)

7. How do the fungus diseases of plants get spread from one locality to another and from one country to another? Describe the various methods followed to prevent such a spread. (16 marks.)

8. What are 'fungicides'? Mention the different kinds describing the mode of application of each and giving instances where each can be applied. (16 marks)

AGRICULTURAL CHEMISTRY. I

Monday, 15th April. 7 A. M. to 10 A. M.

Maximum: 100 marks.

Answer six questions. Questions 1 and 3 are compulsory.

1. What are the constituents of a soil on which you would base your opinion of its fertility? Describe a reliable method of estimating the total and available phosphoric acid contents of a soil. (18 marks.)

2. Give a brief account of the agencies in a soil responsible for the fixation of atmospheric nitrogen. Is there any increase in soil nitrogen when molasses are applied to it? How is the action of molasses explained? (16 marks.)

3 Write a short note on the nature and formation of alkaline soils. Describe the methods of reclaiming such soils, also the measures which can be taken in an irrigation tract to prevent their formation. (18 marks)

4. What do you understand by the term 'Water holding capacity' of a soil? Discuss the relationship between such a capacity and the amounts of silt, clay and organic matter contained in a soil. (16 marks.)

5. Discuss the importance of a soil survey in general and also with reference to a tract proposed to be brought under irrigation. (16 marks.)

6. Discuss the relative importance of farm yard manure and artificial manures in increasing agricultural production. (16 marks.)

7. Discuss the relative merits of the heap, pit and box system of making farm yard manure. (16 marks.)

8. Write a short note on the acidity of soils. (16 marks.)

AGRICULTURAL CHEMISTRY. II

Tuesday, 16th April. 7 A. M. to 10 A. M.

Maximum: 100 marks

Answer six questions. Questions 2 and 5 are compulsory

1. What is meant by Digestibility Cofficient? Describe briefly how you would determine the digestibility coefficient of a feed with cattle. How is the digestibility coefficient of use in evaluating the quality of a feed? (16 marks.)

2. What is the importance of mineral matter in the nutrition of growing calves and milch cows? What is mineral deficiency due to, what are its effects and how would you correct it? (18 marks.)

3. Give a short account of the fate of protein of food in the herbivorous animal from the time it enters the alimentary tract till absorption. (16 marks.)

4. Write short notes on:—(*a*) Photosynthesis, (*b*) Vitamins in cattle nutrition, (*c*) Cyanogenetic glucosides, (*d*) Green fodder in relation to milk yield. (16 marks.)

5. What are enzymes? What is their main function in plant metabolism? Describe their role in the malting of cereals. (18 marks.)

6. What are the chief groups of vegetable oils? Describe their chief chemical properties, mode of occurrence and commercial uses. (16 marks.)

7. Compare the chemical composition of Cow's milk with that of Buffaloe's milk. How would you determine, by simple tests whether a given sample of milk is adulterated or not? (16 marks.)

8. What are the chief groups of bacteria which are present in contaminated milk? How would you control Dairy operations from the time of milking till the milk is marketed to avoid contamination with these bacteria? (16 marks.)