

recorded markedly greater resistance than the other two, viz., Co.'s 213 and 312.

The studies in progress have shown a definite inheritance of anatomical characters in sugarcane hybrids, and it would appear possible by a suitable choice of parents to introduce into new canes certain of the desired anatomical characters.

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February 22, 1941.

THE CARDAMOM WEEVIL,
PRODIOCTES HAEMATICS
CHEV. VAR IN SOUTH INDIA

IN some of the cardamom plantations in Travancore a new pest has appeared in *Prodiocetes hæmaticus* Chev. var., which has been recently reported from Ceylon (Hutson, 1939) as a fairly serious pest in certain areas. The incidence of this pest in South India may have been very low till now and this may account for the absence of any record of this insect as a pest of cardamoms here.

The damage caused is during the grub stage when it tunnels into the rhizome and the basal portion of the pseudostem killing the attacked plant and gradually the associated ones also in the clump probably due to some pathogenic fungus either carried by the grub or getting access through the injured portion. The common shoot borer, *Dichocrocis punctiferalis*, is not responsible for the clump rot as only the attacked shoot is destroyed. A root boring caterpillar, (*Hilarographa* ?) is often met with but it does not bore into the rhizomes and its responsibility for the causation of the clump rot yet remains to be determined.

An account of the weevil pest in greater detail is being published elsewhere.

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A NOTE ON THE MINERAL WATER
FROM SURANGUDI

SURANGUDI, a small village in Kulathur Zamindari in Tinnevely District, is reputed to possess a well whose water is valued for its therapeutic qualities. At the instance of Sir P. S. Sivawamy Iyer, K.C.S.I., who was interested in this mineral water, the geology of the area was studied. A chemical and a spectroscopic analysis of the water was also carried out.

The Zamindari lies within the coastal plain and is relatively featureless. This tract is gradually being elevated with respect to the sea, as evidenced by a shell bed 2 feet thick with recent species of *Arca* and *Cardita*, above the ground level at Surangudi. This rise must have taken place within historical times, as ancient edifices close to the coast are seen buried in sand dunes. Paving slabs of about a foot square, old pottery and coins of Raja Raja (985 A.D. to 1014 A.D.) are occasionally met with in fields.

The village stands on a hard massive dark-brown ferruginous lateritised gneiss. The rock is medium granular and shows patches of ilmenite. The soil of the area consists of red earth and black cotton clay. Sections of the rock show angular to subangular quartz grains, cemented together in a ferruginous matrix. Felspar, magnetite, ilmenite and epidote are noted.

The well is believed to be in existence from the time of King Varaguna Pandian (about 860 A.D.) and gives an yield of only 9 gallons an hour. The water is chalybeate, soft, colourless; shows a faint turbidity in transmitted light, and slight opalescence in reflected light. On exposure to air it sets free a reddish flocculent precipitate of hydrated iron-oxide.

Chemical Analysis:—Five litres of filtered water were used for the determination of total solids.

	Parts per 100,000	
Total Solids	..	28.6
Chlorides as chlorine	..	0.7
(equivalent to NaCl)	..	1.1
Silica	..	16.4
Fe ₂ O ₃ — Al ₂ O ₃	..	1.5
Lime as CaO	..	0.5
Magnesium as MgO	..	0.06
Ba, Mn, F ₂ , Li, P ₂ O ₅ , and B	..	nil

¹ Hutson, J. C., *The Tropical Agriculturist*, 1939, 93, 281.

Spectroscopic Analysis:—This analysis was carried out in the laboratory of The Indian Association for the Cultivation of Science, Calcutta, by Mr. P. K. Seshan under the guidance of Prof. K. S. Krishnan, F.R.S.

IRON IS TAKEN AS UNITY

0.5 to 0.1	0.1 to 0.01	0.0001 or less	Not detected
Sodium	Potassium	Manganese	Arsenic
Calcium	Magnesium	Lead	Bismuth
Aluminum	Chromium	Copper	Gold
Barium	Tin	..	Silver
Strontium	Titanium	..	Zinc
..	Rubidium	..	Cobalt
..	Nickel
..	Beryllium

There is a general belief that a continuous and liberal use of the water has produced beneficial effects in heart troubles, pains in the joints, kidney affections and menstrual complaints. A thorough clinical study may prove valuable.

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March 7, 1941.

CHROMATIN BRIDGES IN THE ROOT TIP OF GROUNDNUT

CHROMATIN bridges were observed at anaphase and telophase of somatic mitosis in root tip cells in germinating seeds of certain varieties of groundnut. In some cells a single bridge was noticed per cell and very occasionally a fragment was also present along with the bridge. In a very few cases, two bridges were observed in a cell. Chromatin bridges are of frequent occurrence in meiosis and have also been produced artificially by means of X-rays. But very few instances are on record of the occurrence of bridges in root tip cells. Mensinkai¹ considered that the bridges he noticed in *Allium* might have been formed by the union of the ends of sister chromatids.

Sikka² assumed that the bridges in *Brassica* originated by the breaking of the chromosomes at the point of overlap in the preceding interphase and subsequent fusion of the broken ends.

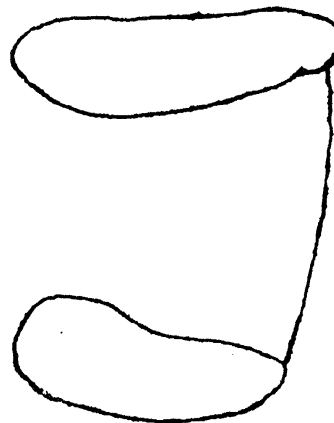


FIG. 1

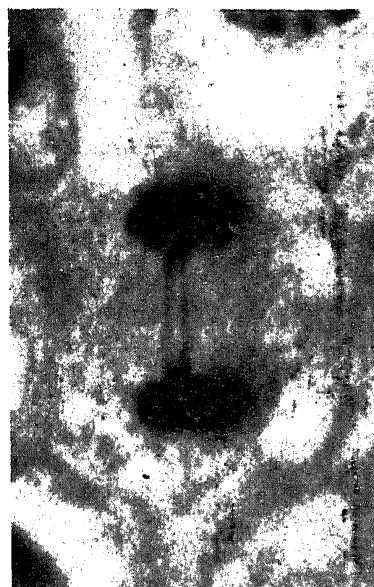


FIG. 2

Jacob³ attributed the formation of bridges in *Clitoria* to the probable reciprocal translocation between two homologous chromosomes. Pathak⁴ recorded of chromatin bridge in the root tip of *Crocus*. Nicholas⁵ noticed bridges in some *Allium* varieties and concluded that 'dehydration, heat and age may cause a weakening of the chromosomes so that breaks occur at the beginning of the activity in the nucleus giving rise to aberrations which result in bridge formation'. In view of the interesting nature of the chromatin bridges and the fact that the occurrence of these in root tip cells has been recorded only in a very few cases till now, the formation of bridges in the root tips of groundnuts is herein recorded. Fig. 1 shows a bridge