TABLE II
*Ratios between elements*

| Samples | Resistant | | Susceptible | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| K : Ca .. | 0·9 | 0·9 | 2·5 | 0·7 | 0·03 |
| K : Mg .. | 2·3 | 2·3 | 10·1 | 1·1 | 0·8 |
| Ca : Mg .. | 2·6 | 2·6 | 4·1 | 1·5 | 2·9 |
| K : Mn .. | 61·4 | 47·6 | 125·3 | 9·1 | 0·5 |
| Ca : Mn .. | 70·9 | 52·9 | 50·6 | 13·3 | 19·5 |
| Mg : Mn .. | 27·1 | 20·7 | 12·4 | 8·7 | 6·8 |

a varied accumulation of the different elements in these infected plants. There was an enormous rise in the amount of magnesium as well as manganese in the infected but apparently healthy plants. In the wilting plants also manganese level was higher than in the healthy control plants. But the key metabolite K registered a great loss in the susceptible plants following infection and a look at the ratios between the elements in these plants, as compared to that in the healthy, shows the thorough imbalance in ionic uptake. It is very interesting to note that the apparently healthy plants of the susceptible variety growing in inoculated soil suffer from a gross derangement in metallic uptake while their counterparts in the resistant variety do not, to any significant extent. In the case of the former, a clear loss in the semi-permeability of the cells is strongly indicated which may be due to the action of vivotoxins, although, for some reason or other, the toxin may not as yet be in sufficient amounts to produce visual symptoms and hence their apparently healthy condition. Perhaps with increase in age these may also succumb to toxic action. On the other hand, the slight disturbance in the normally resistant plants grown in infected soil may only be the result of its response to the presence of the pathogen in the root region, but which is unable to establish itself in this host. It is strongly doubted that toxin production itself is prevented in the root region of the resistant host. This point is under investigation and is expected to give much valuable clue to this disease mechanism.

There seems to be a strong case for following up these changes in more cotton varieties, both susceptible and resistant, as indeed, this study has opened up new vistas into the genetic nature of the control of the uptake of these metals by root systems, for primarily the pattern of uptake of the quanta of different metallic ions seems to be so different in the two varieties of cotton studied [an *arboreum* (K 2) and a *hirsutum* (Cambodia)], even without the complicating factor of the presence of the toxin in the region of the rhizosphere.

The question uppermost in our minds is whether the damage to the semi-permeability of the tissues due to toxæmia is permanent or whether at all the antidoting of the toxin *in vivo* in the region of the root plasma membrane (presumably by a process akin to chelation) is possible so as to register a partial or a complete recovery of the wilting plant.

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## CALCUTTA, MADRAS AND BOMBAY UNIVERSITY CENTENARIES, 1957

THE Centenaries of the Calcutta, Madras and Bombay Universities, which were celebrated a fitting manner during January-February of this year, augur well for the future of higher learning and research in the country.

As Pandit Jawaharlal Nehru, the Prime Minister of India, observed during the celebrations at Madras, the end of one epoch is also the beginning of another, and the recent celebrations may as well be associated with the inauguration of the next hundred years for these centres of learning and what they are bound to usher in. Our hopes are that the record of achievement will be even more splendid.