

green sector. The blue region of the spectrum, on the other hand, appears without any great

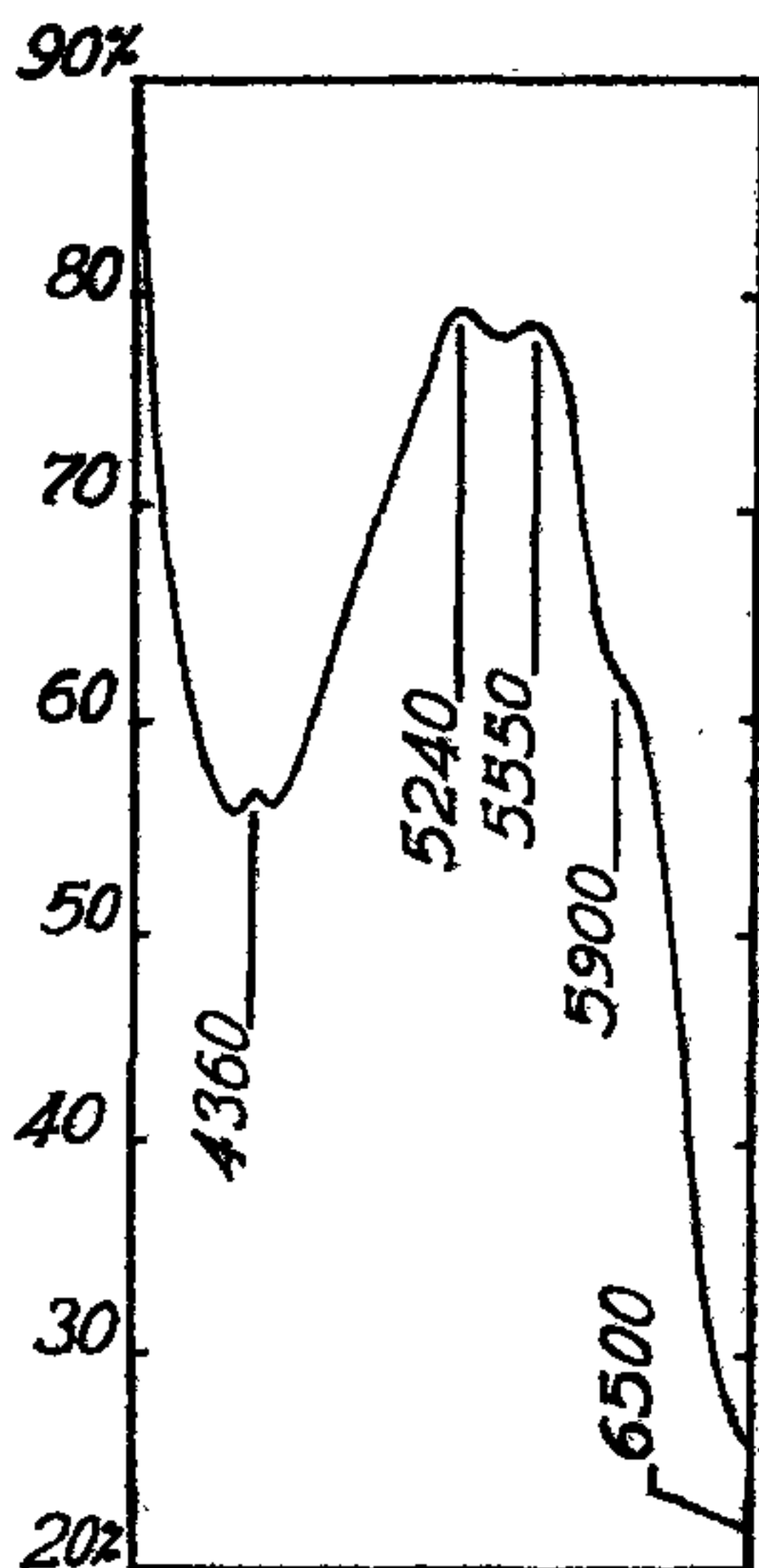


FIG. 2. Absorption by acetone extract of purple *Petrea*

diminution of brightness. The red end of the spectrum is also seen with nearly its normal intensity. On account of their small size, the spectroscopic examination *in vivo* of the true flowers is somewhat difficult. But they appear to exhibit the same features as the calices, but in a more accentuated degree.

The material which is responsible for the colour exhibited by the calices of *Petrea volubilis* is readily extracted by shaking them in a glass-beaker with acetone. The absorption spectrum exhibited by a column of the extract of one-centimetre depth is reproduced as Fig. 2. It exhibits features which are very similar to those observed in the spectrophotometer records obtained with the acetone extracts of the purple flowers of *Lagerstroemia indica* and of the purple verbena, which were reproduced in earlier issues of *Current Science*. These records illustrate the immensely important role played by the yellow sector of the visible spectrum in the perception of light and colour. The absorbing material may be identified as Florachrome B, with a possible admixture of Florachrome A. The presence of the latter would serve to intensify the bluish-purple colour actually observed.

#### THE INDIAN ACADEMY OF SCIENCES: XXXV ANNUAL MEETING

THE Thirty-fifth Annual Meeting of the Indian Academy of Sciences was held on the 20th, 21st and 22nd December, 1969 at Aurangabad under the auspices of the Marathwada University. The inaugural function and the public lectures were held in the Mahatma Gandhi Auditorium of the Medical College, while the scientific meetings were held in the lecture hall of the Physics Department of the University.

Professor T. S. Sadasivan, Vice-President of the Academy, presided over the inaugural function. Dr. N. R. Tawde, Vice-Chancellor of the Marathwada University and Chairman of the Reception Committee, gave the welcome address.

Professor M. G. K. Menon, Director of the Tata Institute of Fundamental Research, Bombay, delivered the inaugural address on "The Elementary Particles of Physics".

At the scientific meeting in Section A, held in two sessions on the 21st December, and presided over by Prof. M. G. K. Menon, the following papers were presented and dis-

cussed: (1) "Structure of the Magnetosphere" by Dr. K. S. Viswanathan, National Aeronautical Laboratory, Bangalore; (2) "Astrophysical Aspects of Modern Cosmic-Ray Studies" by Prof. Yash Pal, Tata Institute of Fundamental Research, Bombay; (3) "Aspects of Computer Sciences and Technology" by Prof. R. Narasimhan, Tata Institute of Fundamental Research, Bombay-5; (4) "Molecular Structure and Nuclear Magnetic Resonance" by Prof. P. T. Narasimhan, Department of Chemistry, Indian Institute of Technology, Kanpur; (5) "Electronic Interpretation of Organic Reactions" by Dr. S. Ranganathan, Department of Chemistry, Indian Institute of Technology, Kanpur; (6) "ESR Investigations on Radiation Induced Electrons and Their Reaction with Biomolecules" by Dr. B. B. Singh, Biology Group and Medical Division, Bhabha Atomic Research Centre, Bombay-85.

The scientific meeting in Section B was held on the 22nd December in two sessions. Presiding over this meeting Prof. T. S. Sadasivan, Director, Centre of Advanced Studies in

Mycology and Plant Pathology, University of Madras, gave an address on "Immunoserology in Plant Pathology". The following papers were presented and discussed: (1) "Electron Microscopy and Ultrastructure" by Prof. C. V. Subramanian, University of Madras; (2) "Tea: Clonal Selection and Propagation" by Dr. K. S. Venkataramani, Director, United Planters' Association of South India; (3) "Distribution of Oxygen in the Arabian Sea" and (4) "On the Occurrence of Oxygen Maxima and Minima in the Upper 500 Metres of the North-Western

Indian Ocean" by Dr. R. Jayaraman, National Institute of Oceanography; (5) "The Acetylcholine-Atropine Antagonism as Determined by a Series of pA Values" by Dr. M. B. Gharpure, Medical College, Aurangabad.

Two public lectures were delivered, the first on the 21st evening by Dr. S. Bhagavantam on "Electronics and Its Applications" and the second on the 22nd evening by Dr. M. S. Swaminathan, Director, Indian Agricultural Research Institute, New Delhi, on "Genetic Harvest of Our Biological Resources".

ABSTRACTS OF PAPERS PRESENTED AT THE XXXV ANNUAL MEETING  
 OF THE INDIAN ACADEMY OF SCIENCES AT AURANGABAD, MARATHWADA  
 UNIVERSITY, DECEMBER 20-22, 1969

Immunoserology in Plant Pathology

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Although serology has played a notable part in bacteriology and virology, it has hardly been applied to the same extent in determining specificity in fungal pathogenic forms. Common antigens between host and parasite as a factor in resistance or susceptibility seems to be the objective to be achieved. In other words, disparity between the antigens constituting a resistance factor has to be explored in much detail as it constitutes an area in which much can be understood in host-parasite interactions.

The concept that response of the host towards immunity could be selective and have a bearing on fitness to survive of many parasitic species has had support in both animal and plant diseases. It has been shown, for instance, that the parasitic worm *Hæmonchus contortus* displayed less antigenic disparity towards sheep which is its natural host than with rabbit. None of the larval antisera derived from sheep reacted with adult worm antigenic fractions and also none of the antisera from adult worms derived from sheep showed reaction with antigens from larvæ. Therefore, the lack of response of sheep to antigens common to adult and larval forms seemed to indicate that these antigens were also common to sheep and perhaps constitute "fitness characters". Turning to *Salmonella typhimurium* which had greater susceptibility in mice to infection as compared to rats, susceptibility was ascribed to inability of the susceptible host to produce 'anti-factors' against antigens of the parasite. The common

antigen concept has been extended to animal viruses: turkeys resistant to Rous 1 virus could be made susceptible by treating in the embryonic stage with red blood cells of the chicken which is its natural host and, indeed, antigenic similarity between Rous 1 virus and the red blood cells of chicken has been established.

There is no certain evidence, of the type of immune responses mentioned above in plants infected by bacteria, fungi or viruses. However, the formation of abnormal substances in plants under pathogenesis has been shown in many diseases. Dealing with rusts, specific antigens in each of four races of *Melampsora lini* was shown to be shared by only those lines of flax that were susceptible to a particular race. Conversely, a race of rust was avirulent to flax lines that lacked the specific antigen. In these tests four lines of flax that differed from each other in a gene-controlling reaction to the rust were used. Study of antigens of cotton (*Gossypium hirsutum*) and *Xanthomonas malvacearum* showed that host specificity could be immunological in reaction. Similarly, host specificity has been noticed in sweet potato (*Ipomoea batatas*) against *Ceratocystis fimbriata* isolates which produces the black rot disease. These experiments with *C. fimbriata* indicated that an immune response may operate in plants and that a bridge between common antigens in a host and a parasite may provide a less hostile environment to the pathogen.

In plant viruses serology has mostly indicated group specificity and has aided in indicating common antigenic determinants pointing to grouping serotypes and strains. One such recent example is that the Indian legume virus isolate *Dolichos ensation mosaic virus* (DEM<sub>V</sub>)