for service is retained unimpaired till an advanced old age. The influence of mind on the discharge of duties is far more profound than is commonly recognized.

It is impossible to assume that the age of a person at fiftyfive in itself impairs his mind to the extent of disqualifying him for the performance of public functions. The constant vigilance and tireless energy so necessary for a successful business organization in which the directing authorities have to keep all their fingers on the pulse of the market, finance and labour, do not appear to be foreign to them though they may have crossed the official age limit. The official duties of the Prime Minister and of his colleagues in the Cabinet must be certainly of a very arduous character yet in their assumption, consideration of age plays little or no part. Really we are dealing with two classes of offices in public affairs where an anomalous position is created. Those which are in the gift of the government are regulated by age rules and others virtually in the gift of the electorate are independent of them, though in both the nature and volume of work to be transacted are almost the same, and if there is any difference at all the incidence is certainly heavier in the case of elective appointments... .

The decision of the Government to terminate the services of professors at fiftyfive years is one of those rules which in their very nature must operate unequally. It is perfectly true that some professors are too old at fifty or even forty, especially such as have neither a hobby nor vital interests beyond absolute routine; it is equally true that others are quite young at sixty-five or even seventy. It seems to us that in the higher branches of education, a living mind endowed with a wide and varied experience, a ripe and unfaltering judgment, a real enthusiasm and power to initiate and conduct research and a judicious temper and discernment must be a more valuable and indispensable asset than buoyance and vigour whether to universities or governments. Such a mind confers prestige and creates tradition. The two-fold nature of the work devolving on a professor demands at once a power and readiness on his part to put himself on a level with young and inexperienced men and a faculty to seek and establish variety in his own work. Age is commonly believed to produce in mind, a warped and embittered view of life, a total lack of sympathy with the overflow of youth, a dogmatic assertiveness 'and an idealized memory of the greatness of past time'. These effects, it must be remembered, are more pronounced in other walks of life than in teaching and so long as the professor maintains an inquisitive spirit towards learning and research, he is practically immune from the mental disease of old age. There are numerous cases of professors old according to government rules but young enough to retain their original freshness and mobility of mind to be able 'to share in the enthusiasm of the young and to travel with them along the same road'. The truth is that old age is not due to years but depends largely on circumstances and temperament 'and the remedy therefore lies less in general rules than in the treatment accorded to the professor during his career'. Compulsory retirement at fiftyfive years, we are convinced, is not a satisfactory remedial measure for a sickness which may have had its origin almost at the commencement of the service or even before. Subsequent conditions may either allay or aggravate the malady.

## SCIENTIFIC CORRESPONDENCE

# Efficacy of the plant, *Polygonum hydropiper* against rice brown planthopper *Nilaparvata lugens* Stal.

*Polygonum hydropiper*, known as kalatadi, galpudi, gahurunia and gotkinamaru in different tribal areas, is a weed generally occurring in muddy or swampy places of canal sides and river banks of eastern India (Figure 1). Leaves of the plant are mainly used as a fish poison and in some areas it is used to kill ticks and mites of cows and buffaloes. In view of its usage as an acaricide as well as piscicide, the plant was tested for its insecticidal property, if any, against the insect brown planthopper *Nilaparvata lugens* Stal (BPH), a serious pest of rice.

Solvent extract from leaves with different solvents such as acetone, benzene, alcohol, chloroform, hexane, methanol and water was made and the solvent was evaporated leaving the extract as solid residue. This was dissolved in *n*-butyl alcohol and kept as the stalk solution, which was mixed with water at the time of application along with labolene as an emulsifier at the rate of 0.5 ml per 100 ml of solution.

Extracts were applied separately to the potted plants of variety Jaya in the net house. Untreated plants sprayed with water were kept as control. Each treatment was replicated thrice. Fifth instar nymphs of BPH (20 insects per replication) were released on plants after the application of the botanical. Insects were kept confined to the plant by long-necked glass chimneys. Mortality count was taken after 24 h of release. This was repeated in each case with different weight of leaf samples till the lethal dose against the insect was obtained.

Parallely, the plants already harbouring BPH of different instars were treated by different solvent extractions of 100 g leaf sample which was found to be the lethal dose for benzene extraction obtained in the earlier experiment. Then, insects were observed daily to note their development and also mortality.

**Figure 1.** *P. hydropiper*, a weed occurring in eastern India.

**Table 1.** Mortality of 5th instar nymphs of BPH in different solvent extracts

| Extracts | Per cent mortality* of 5th instar nymphs on leaf sample (g) | | | |
|---|---|---|---|---|
| | 20 | 50 | 100 | 150 |
| Acetone | 30.0 | 43.3 | 63.3 | 100.0 |
| Benzene | 90.0 | 100.0 | 100.0 | 100.0 |
| Alcohol | 36.7 | 46.7 | 63.3 | 93.3 |
| Chloroform | 33.3 | 60.0 | 73.3 | 100.0 |
| Hexane | 43.3 | 56.7 | 66.7 | 90.0 |
| Methane | 43.0 | 60.0 | 70.0 | 100.0 |
| Water | 6.7 | 10.0 | 20.0 | 25.0 |

*Average of 3 replications.

**Table 2.** Mortality of BPH of different instars as well as adults on 100 g leaf sample extract with different solvents

| Extracts | Per cent mortality* in different extracts | | | |
|---|---|---|---|---|
| | 1st and 2nd instars | 3rd instar | 5th instar | Adult |
| Acetone | 100.0 | 100.0 | 70.0 | 73.3 |
| Benzene | 100.0 | 100.0 | 100.0 | 100.0 |
| Alcohol | 73.3 | 70.0 | 56.7 | 60.0 |
| Chloroform | 100.0 | 100.0 | 73.3 | 80.0 |
| Hexane | 75.0 | 63.3 | 65.0 | 73.3 |
| Methane | 66.7 | 60.0 | 66.7 | 66.7 |
| Water | 20.0 | 15.0 | 16.7 | 20.0 |

*Average of 3 replications.

Benzene extract was the best solvent for its effectiveness (Table 1). Leaf sample of 20 g when extracted with benzene showed 90 per cent mortality of the insect, whereas in other solvents the mortality was below 50 per cent.

Direct spraying on insects showed more effective results in all the solvents except water (Table 2). Extracts from all the organic solvents were able to kill high percentage of insects belonging to 1st, 2nd and 3rd instar. However, the mortality was reduced against 5th instar nymphs in all the extracts except benzene, which still registered 100 per cent mortality. Acetone and chloroform were next in the order of effectiveness showing 70.0 and 73.3 per cent killing against 5th instar nymphs and 73.3 and 80.0 per cent against adults respectively (Table 2).

It can be inferred that the leaves of plant *P. hydropiper* possess insecticidal property against BPH within 24 h of treatment with benzene extract. Hence, this can prove itself as a suitable component in the control of BPH in rice and is an exploitable technology by the farmers.

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