that obtained from the seeds by the preparation of derivatives and shown to be identical.

The stem-bark which has been carefully freed from any root-bark, on the other hand, yields no significant amount of gossypol. No crystalline matter could be obtained under the conditions employed for the preparation of anil.

Gossypol seems to be specially peculiar to the cotton plant (gossypium group) since the seeds and root-barks of other related plants resembling cotton do not contain gossypol.

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ON THE VIABILITY OF PADDY SEEDS *ORYZA SATIVA*

Studies on the longevity of seeds have engaged the attention of the various research workers. Takagi[7] in mulberry seeds, Kincaid[4] in tobacco seeds, Griffiths[3] in lettuce seeds, Akamine[1] in number of garden and crop plant seeds including rice stored for six years, Kondo[5] in hulled rice stored for four years and Christidis[2] in cotton seeds, have found that by reducing the moisture of the seeds and storing the same under air-tight conditions, viability of the materials is maintained for a longer period. Rodrigo[6] stored air-dried farm crop seeds including rice in air-tight containers. The study was extended for 95·8 months during which period seeds from all the paddy varieties that were stored lost their complete viability in 84·5 months.

Paddy seeds stored under ordinary conditions at Sabour were found to lose complete viability in about nine months. To ascertain the period for which paddy seeds could be made to remain viable, seeds from one pure strain, 36 B.K., were stored after one month from the date of harvest, in various kinds of containers mentioned below. After a lapse of 27 months from the date of storage, samples from the various containers were taken up to determine the viability of the seeds and the results obtained are given below.

The percentage of germination was nil when the method of storage was (1) air-tight tin containers, (2) earthen pots with mouth closed with mud, (3) earthen pots with mud plastered all round, (4) earthen pots with coal-tar plastered all round, (5) glass-stoppered bottles, (6) glass-stoppered bottles with tin-mercury amalgam, (7) desiccator without any desiccating agent (not vacuum), (8) desiccator without any desiccating agent (in vacuum); a hundred per cent. germination was, however, obtained when the method of storage was (9) desicator with calcium chloride, (10) desiccator with calcium chloride (in vccuum), and (11) desiccator with sulphuric acid.

Moisture percentage of the seeds from containers[9,10,11] was found to be 3.6 per cent. as against the 10-12 per cent. of moisture characterising the other seeds. The reduction in moisture content may be responsible for maintaining the full viability of the seeds.

Seed moisture from one pure strain, 36 B.K., of paddy was, therefore, reduced by drying them in the hot sun in the month of May to 4·5 per cent. and 3·6 per cent. and such dried samples were stored in sealed tin containers without any dehydrating agent in several sets. After the expiry of each year, of storage, samples from these containers were taken out to determine their germination percentage. After seven years of storage samples are still continue to show about 80 per cent. of germination. The maximum period, for which they maintain their viability, is still under observation.

A research worker who is testing a large number of varieties and strains under limited means, may thus store a part of his materials with complete safety for some years against loss of viability for examination later on. Moreover seeds of selected varieties and strains, which have been given out for propaganda and demonstration, may be preserved and the labour of maintaining them every year may thus be easily saved.

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SEED TRANSMISSION OF MELON MOSAIC VIRUS

In connection with the analytical work on viruses nursery of cucurbitaceous plants, *e.g.*, cucumber (*Cucumis sativus* L.), 'tori' (*Luffa ægyptiaca* Mill.), red gourd (*Cucurbita maxima* Duschesne), bottle gourd (*Lagenaria vulgaris* Ser.), bitter gourd (*Momordica cha-*

rantia L.), melon (*Citrullus vulgaris* Schrod) and 'sarda' of Kabul (*Cucumis melo* L.) was raised in sterilized soil in the insect-proof glass house. In the first instance only twelve plants of each type were raised. All the plants thus raised appeared to be perfectly healthy excepting one plant of *Cucumis melo* which showed symptoms of virus infection. At the time the nursery was raised, there was no infected plant in the insect-proof cabin but as a precaution the plants were regularly sprayed with soap and nicotine sulphate twice a week. The occurrence of this case of infection was noteworthy as the disease was suspected to be transmitted through seed. The seeds of *Cucumis melo* were sown during January-February 1945. The germination was much delayed due to prevailing low temperature and the growth of the plants was slow. The first symptoms of infection were observed within a week after the appearance of the first true leaf. The infected leaf first became pale in colour and then gradually developed circular interveinal mottle accompanied by puckering of the leaf-surface. Within the next few days puckering developed to such an extent that the whole leaf appeared to be distorted and the leaf-apex was raised upwards. By this time the plant had put out two more leaves which also showed slight puckering and interveinal mottle (Fig. 1).

FIG. 1

Seed of *Cucumis melo* as well as that of other cucurbits except *Lagenaria vulgaris* Ser. had been purchased from the local market in one lot. The nursery of all the cucurbits was raised in several lots at different times but no case of seed transmission except in *Cucumis melo* was observed. Large number of plants of *Cucumis melo* were raised by planting fifty seeds at a time from the same lot but only 56 per cent. of the plants indicated seed transmission of the virus.

The disease was succesfully transmitted by mechanical means to some cucurbitaceous plants, *e.g.*, *Cucumis sativus*, *Momordica charantia* and to some solanaceous plants, *e.g.*, *Datura stramonium* L. and *Nicotiana tabacum* L. Var. *German samson*. The period required to bring about infection in different hosts varied from 4-7 days. The disease could also be transmitted to cowpea (*Vigna sinensis* Endl.).

The reactions on differential hosts indicate that the causal virus is a strain of *Cucumis Virus*[1] (Doolittle) and that the virus is seed transmitted. The results are similar to those of Kendrick (1934) who described a mosaic disease of musk melons (*Cucumis melo* L.) and proved the disease to be seed transmitted. McClintock (1916) indicated that cucumber mosaic virus might be seed-borne and Doolittle and Gilbert (1919) reported seed transmission of the cucumber mosaic virus by the wild cucumber. The symptoms of squash-mosaic-virus were described by Middleton (1944) who demonstrated the disease to be seed transmitted. Mahoney (1935) also observed seed transmission of a cucurbit virus and reported maximum seed transmission of 33·3 per cent.

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MUSTARD-APHID (*RHOPALOSIPHUM PSEUDOBRASSICAE* DAVIS)

Rhopalosiphum pseudobrassicæ Davis is one of the most serious pests of mustard. In the beginning of the attack the inflorescence of the mustard plant becomes thickly covered with the aphids, as a result of which most of the flowers are destroyed and those that are saved from the attack produce under-developed pods which in their turn become dried up and produce more or less nothing. Later on, the whole plant becomes covered with the