was recrystallised from methanol to yield pure (II) m.p. 118° C (Yield, 72%).

(Found : C, 54·03 ; H. 5·29 ; N. 10·41 ; S, 12·18. $C_{12}H_{14}N_2SO_3$ requires C, 54·12 ; H, 5·26 ; N, 10·52 ; S, 12·03%). Molecular weight = 266. U.V. spectrum (Ethanol, *nm* : 390, 304, 256. I.R. (Nujol, cm ^{1}) 1740 *s* (ester), 1705 *s* (C = O), 1660 *s* (C = N), 1260 *s* (C = N), 1200 *s*, 1155 *s*. 1120 *m*. NMR (60Hz, $CDCl_3$, TMS, values): 6·3 *s* (1H, olefinic proton adjacent to ester group), 5·45 *d* (1H, olefinic proton adjacent to methyl group, J = 1 cps). 3·9 *s* (3H, $-OCH_3$), 1·95 *d* (3H, $-CH_3$) J = 1 cps), 1·7 *s* (6H, two $-CH_3$).

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GRAVIMETRIC DETERMINATION OF CADMIUM WITH N-BENZOYL-*o*-TOLYLHYDROXYLAMINE

N-BENZOYL-*o*-TOLYLHYDROXYLAMINE has recently been used in the determination of certain metals[1-3]. The purpose of the present communication is to investigate further uses of this reagent for analytical problems.

Experimental.—All the reagents were of AnalaR grade. The ligand was prepared by the method as described earlier[1]. The ligand solutions were made by dissolving it in 10–20 ml of 90% ethanol before use. Standard cadmium (II) solution was prepared from cadmium nitrate and standardized by the usual method[4]. Solutions of other ions were prepared from nitrate or the sulphate salts of cations and from the sodium, potassium and ammonium salts of anion. A Cambridge pH meter was used for pH measurements.

Procedure.—An aliquot of cadmium (II) solution containing 5·0 to 32·0 mg of the metal was diluted to 200 ml, heated to 40–50° C and the reagent (three-fold) solution was added with stirring. The pH of the mixture was then raised to 5·8–7·0 by the addition of dilute sodium hydroxide solution. A white precipitate of cadmium complex that formed was made to flocculate by digesting on the hot water-bath (60–70° C) for 20 to 30 minutes with occasional stirring. It was filtered through a weighed medium porosity sintered glass crucible, washed with hot (50° C) water, dried at 110–120° C to a constant weight (1·3 hours), and finally weighed as $Cd(C_{14}H_{12}O_2N)_2$. The gravimetric factor (cadmium/cadmium complex) is 0·1991. The results are given in Table I.

TABLE I

Determination of cadmium with the reagent

Mg. metal Taken	Mg. metal Found	Error %
5·12	5·11	−0·19
	5·12	0·00
12·40	12·36	−0·32
	12·41	+0·08
30·00	30·06	+0·13
	30·10	+0·33

Determination of cadmium in presence of other ions. Co-precipitation studies were made with a number of other ions. The results indicated that Ca, Sr and Ba did not interface. The interference of Mg, As (III), Sb (III), Mo (VI) and W (VI) was eliminated by using sodium potassium tartrate (2·0 g), while ammonium acetate (2·0 g) and ammonium carbonate (2·0 g) were used to mask La (III) and U (VI) respectively. The pH was maintained between 6·5 and 7·0 while effecting above separations and the initial washing was carried out with hot water containing a little of the masking agent. Hot water was used for the final washing. Tartrate did not interfere above pH 6·5 while oxalate, citrate, cyanide, iodide, chloride, fluoride and EDTA interfered within the pH range, 5·8 to 7·0.

Results and Discussion.—The white cadmium (II)-benzoyl-*o*-tolylhydroxylamine complex was sparingly soluble in acetone, eathanol, methanol, ether, benzene, chloroform, carbontetrachloride and petroleum ether. It melted with decomposition at 221 ± 1° C. The complex was analysed for its carbon, hydrogen and nitrogen content to determine its composition. The composition of the complex corresponds to the formula $Cd(C_{14}H_{12}O_2N)_2$ in which cadmium to ligand ratio is 1 : 2 (Found :

C, 59·24; H. 4·21; N, 5·00. Calc: C, 59·53; H, 4·25; N, 4·96%).

In a series of experiments the pH was fixed at 6·0 and the amount of the reagent was varied. It was observed that at least three times the theoretical quantity of reagent was necessary for complete precipitation.

In order to find out the suitable pH range in which cadmium could be determined, a series of estimations were carried out at various pH-values and it was observed that cadmium is quantitatively precipitated in the pH range, 5·8 to 7·0. The precipitation commenced at pH 4·8.

The results of a few estimations of various quantities of cadmium indicated that 5·0 to 30·0 mg of cadmium could be determined in a volume of 200 ml with an accuracy better than ± 0·5%.

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INHERITANCE OF POLLEN CONTENT IN RICE

THE development and expression of different parts or organs of plants have been known to be under genotypic control. Investigations in this Institution revealed that pollen content (number of pollen grains per anther) is a varietal or genetic character in rice[1]. In view of the importance of pollen production in pollination, it is of significance to determine the nature of genetic control and inheritance of pollen content in rice. An experiment was carried out with eighteen varieties of rice and their hybrids to understand the nature of genetic inheritance. The results are presented in this report. This is a preliminary report indicating segregation for pollen content in plants.

Eighteen varieties of rice listed in Table I were grown in the Paddy Breeding Station, Coimbatore, and hybridisation was effected between 32 selected combinations during 1972. Parents and hybrids were sown in rows during the main season, 1972. Among the parents Co. 2, Co. 7, Adt 8 & T. 2750 have not been studied since they did not flower due to very late planting. When the plants were in shot blade stage, 5 to 10 spikelets from each panicle were selected at the rate of ten plants from each parent and hybrid. The spikelets were then fixed in 70% alcohol in specimen tubes and stored in a frigidaire at 16° C. The spikelets from each parent or hybrid were pooled and 50 anthers were then dissected out from them and transferred to a glass vial with 1·25 ml of distilled water. A uniform suspension of pollen was prepared by gently crushing the anthers to empty the contents. One drop of Teepol was added to the suspension. The suspension was transferred by means of a micropipette to the Spencer haemocytometer. Number of pollen grains in the four corners in the haemocytometer was counted under a microscope. The count from each corner was treated as one replication. Fifty such counts were taken. The number of pollen grains was then estimated following the method of Oberle and Goertzen[2]. The data on mean number of pollen per unit area (corner) of haemocytometer for parents and hybrids are presented in Table I.

The number of pollen grains in the parents ranged from 1·87 to 13·12 per unit area with a mean value of 6·78. In the hybrids the range was from 3·08 to 16·87 with a mean of 6·87. Statistical analysis revealed that there was significant differences for pollen content among the parents and also among the hybrids. Among the hybrids tested, 13 had pollen content on a par with that of the higher parent and only 2 were significantly superior over the respective higher parent. Seven hybrids had pollen content significantly lower than the respective higher parent.

Two F_2 populations, one from self-fertilisation of F_1 of IR.20 × IR.8 that showed the lowest pollen content (3·08) and one from the F_1 of PVR.1 × IR.20 that showed the highest pollen content (16·87) were studied during 1973. In each, pollen content was estimated in 40 F_2 plants along with parents. The results are shown in Table II. In the F_2 of IR.20 × IR.8, the F_1 was towards lower parent in respect of pollen content while the F_1 of PVR.1 × IR.20 had surpassed both the parents for pollen content. However, in F_2s of both combinations, the range of pollen content was similar (6 to 18) and the mean values were also more or less equal.

The present investigation thus brings out that pollen content is under gene controlled systems in that different varieties differed in their pollen content such as high and low. In their crosses, some showed increase over parents while some others showed decrease in pollen content and tended towards lower parent. The F_2 showed genetic segregation in a pattern characteristic with segregants being either low or medium or high in