AGRICULTURAL RESEARCH COUNCIL

Cabinet Users' Meeting (May 9th, 1968, N.V.R.S.)

Mr. Austin, Dr. Bleasdale, Dr. Hardwick (N.V.R.S.), Mr. Moulsley (N.I.A.E.), Mr. Bambridge (Sutton Bonington), Dr. Thorne (Rothamsted), Dr. Hughes and Mr. Dickinson (Reading), Dr. Hurd (G.C.R.I.), Dr. Morgan (Agriculture, Cambridge), Dr. Caseley (W.R.O.), Dr. Jewiss and Mr. Farrow (Hurley), Dr. Brown (Birmingham), Dr. Simon and staff (Manchester), Dr. Hackett and Mr. Clarkson (Wantage), Dr. Bishop (Imperial College).

1) No clear decision on service agreements seemed possible. Saxton's had offered a service agreement which appeared mainly concerned with general structural maintenance with little reference to electrical fault finding. The cost of the service was not quoted.

2) a) Air Filter Services had gone out of business and no alternative source for the relatively cheap "Aresta" or "Fibrosceta" material had been found. Mr Bambridge had some surplus to his requirements for disposal. The Mark II cabinets are being fitted with Bondina PSB/290 which is obtainable ready cut from Saxton's at 4/6d a pieceor from Bondina, Greetland, Halifax, at 3/- piece. Uncut rolls (giving about 230 pieces) work out at about 2/7d piece.

b) Saxton's have a good stock of heater elements which are made as a special by Eltron Ltd., Strathmore Road, Croydon, Surrey.

c) Any immersion heater thermostat (£1-2) will do to replace the lamp housing safety stat. The more expensive Satchwell one is not needed.

d) The Satchwell controllers are not standard. The works reference is: Transistorised Duotronic Single Stage Controller No. E to operate on 240 V a.c. Night desired value potentiometer incorporated with provision for external switching by relay. Calibrated °F 40-100 with Centigrade equivalents. Supplied to Messrs. Saxton for Contract A.R.C./CEC/II.1966.

In fact no controller box has given trouble other than needing valve replacements (Marh I only). There have been numerous replacements of feed back potentiometers and some of failure of the detector. These latter should be carried as spares and their replacement practised.

e) The rectifiers to relay 8 have inadequate heat sinks on some Mark I cabinets. Replacement rectifiers can only be obtained from Saxtons.

f) A modification of the mixing valve to extend the operational range beyond positions 2-5 has been made at Reading by using ½" sleeves in the valve body. These sleeves can be obtained from Satchwell's at about 11/- each.

g) Cooler Bank. At least two types, one with round fins (inefficient) and the other with square (to specification) appeared in the Mark I cabinets. Faulty control, especially of dewpoint,may be traced to non-uniform passage of air over the ill spaced coils or to inefficiency of heat exchange by the round finned types. Replacements are £40 from Saxtons.

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h) Fluorescent tubes. A contrast for supply' through the Ministry of Health is being negotiated.

Wantage reported good growth of cereals in Phillips TL 35 colour tubes.

i) Mr. Clarkson offered details of his automatic restart and fail safe alarm circuit to anyone interested.

j) Pests. The hardboard sub-floor in Mark *I* cabinets *vas* not varnished and is liable to fungal infestation if much water is spilled on to it.

k) The merits of flood sub-irrigation (Reading), capillary sub-irrigation (N.V.R.S. and G.C.R.I.),volmatic trickle feed and slop watering were discussed. All might be best in appropriate circumstances.

Mr. Austin demonstrated an automatic watering weighbridge designed by Fisons.

l) Carbon dioxide monitoring was discussed in detail. It was regretted that the Brenaig James conductivity meter had not reached the commercial production stage. Most laboratories were thinking along the lines of manual control of individual cabinets with multichannel monitoring using an IRGA. Such a system has been in use at Reading for four years. The Mark II cabinets are likely to suffer CO_2 depletion unless enriched or force ventilated. The latter introduces the necessity for prehumidification.

m) Sulphur dioxide pollution, especially during winter is a serious hazard. Its effects are the more insidious as they may only be a reduction in growth rate, without obvious symptoms. Information on installations with activated charcoal, water or other scrubbers is urgently needed. SO_2 monitoring by conductivity was demonstrated.

n) Mr. Austin showed illustrations of a bioassay for toxic plastics using tomato and cauliflower (Asmer's Highlight being particularly sensitive). Pale green plastic hose is a major offender but all plastics except clear or white polythene are suspect. Some black irrigation hoses have been found to be toxic.

o) Dr. Thorne was obtaining 8 ft. tungsten lamp supports of square cross section with lamp brackets for £2.10.0 each (exclusive of lamp holders, lamps and wiring). The prices would become more favourable if other people would order at the same time in 8 ft. or 5 ft. lengths. If interested, contact Dr. Thorne.

p) The capasity of 4 ft. (standard) cabinet is about 420 litres.

q) A number of people reported discrepancies between repeats of the same experiment in time and some gross abnormalities in growth. In the majority of cases the plants had been grown in a glasshouse for a period, sometimes only for a few days, before being put in the cabinets. The importance of pretreatment effects appears serious and transfers from

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natural to artificial light are best avoided when not essential.

The effects of pretreatment, sulphur dioxide contamination, fluctuations in CO_2 level, and toxic plastics demand the utmost circumspection in carrying out cabinet experiments, particularly quantitative studies of growth.

r) Dr. Hughes was to obtain a list of spares carried by Saxtons. This will be circulated when it arrives,

3) Dr. Hughes was to convene a meeting of Dr. Thorne, Dr. Hurd and any other interested persons to discuss naturally lit cabinets.

4) Mr. Austin, Dr. Bleasdale and Dr. Hardwick described the system of cabinet usage and current work at N.V.R.S.

5) Dr. Thorne invited the users to meet at Rothamsted in November Thereafter it was suggested that an annual meeting in November would satisfy the needs of users.

We wish to thank the Director and Staff of N.V.R.S. for their hospitality.

May 24th, 1968. **Dr. A. P. Hughes.**