TECHNICAL SESSIONS

Tuesday Morning, December 9, 1986

The thirty-sixth annual meeting of the Eastern Region of the International Plant Propagators' Society convened at 8:00 a.m. in the Nigerian Room of the Hershey Lodge, Hershey, Pennsylvania.

PRESIDENT SMITH: I would like to share some good news with you. The preregistration this year is over 500 and with the walk-ins it is at 550. The highest meeting we ever had was 550 in 1980 at Boston, Massachusetts. So before this day is out, you will be part of the largest crowd to attend an Eastern Region Meeting or any other IPPS meeting.

I have two people I want you to meet. The first is Dr. Richard Grubb, the Secretary of Agriculture for Pennsylvania. (Dr. Grubb welcomed the attendees to Pennsylvania and wished them a good meeting.) The second person is Dick Hutton, the President of the American Association of Nurserymen and a Pennsylvania nurseryman.

I will now turn the program over to George Good, the Moderator for the morning session.

ECONOMICAL PROPAGATION STRUCTURES FOR THE SMALL GROWER

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Membership in IPPS as well as various other professional nursery organizations invariably gives us opportunities to tour many prestigious nurseries. We see their propagating facilities and come away with a feeling of respect and probably a bit of envy. When we get home, however, we soon realize that even if we did have a sophisticated 30,000 sq ft propagation house, the most probable method of utilization would be by having our plants off in one corner and having a weekly barn dance in the remaining empty space.

The facts of life of the small nursery (ours is 8 acres) is that you simply do not need a large propagation facility. We currently propagate 95% of our own stock. This includes summer softwood cuttings in mist beds as well as winter hardwood cuttings in bottom-heated beds without mist. These winter, bottom-heated beds also serve to hold the young stock that we graft during the December to March period. We do 100% of our own grafting of both evergreen

and deciduous plants. Our business make-up is currently 75% retail and 25% wholesale. We anticipate the percentage of wholesale to increase in the next few years to 50%. For many years (we were established in 1923) we have used many different types of propagating structures and now have come to using two basic types.

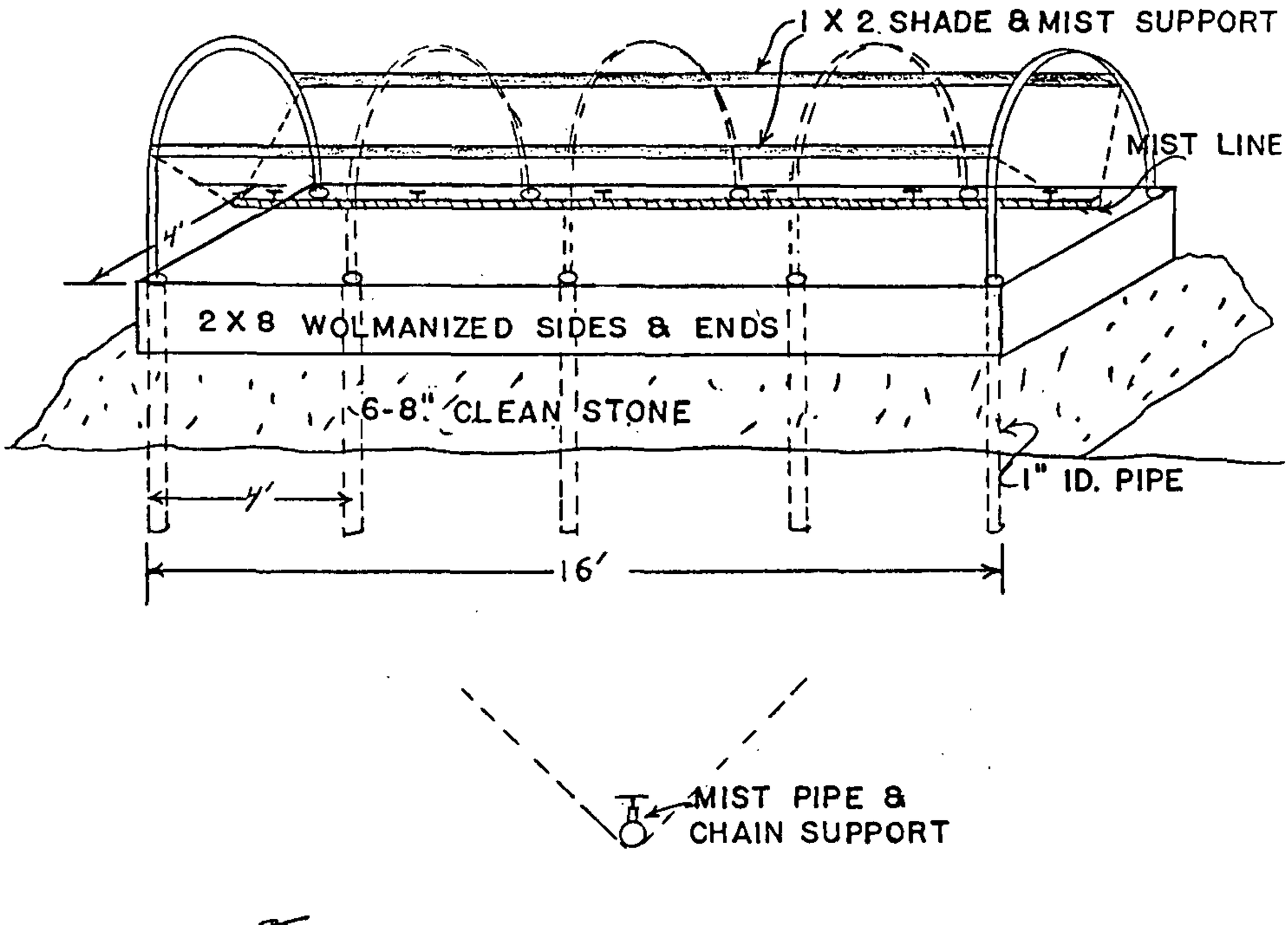
Our summer softwood work is done in an extremely simple mist bed (see Fig. 1). We start by placing approximately 6 to 8 in. of clean stone down on an open, well-drained piece of ground. On top of this we establish the level sides and ends of our bed by driving 3-ft lengths of 1-in. pipe into the ground and bolting 2 × 8 in. wolmanized lumber to them. The spacing of the pipes is approximately 4 ft apart along each side. The bed is then filled with the appropriate propagating medium. We make simple arches of 10-ft lengths of ¾ in. electrical conduit which will sit into the tops of the 1-in. driven pipes. The PVC mist line pipe is suspended by pieces of small chain from these arches. Wires may be used to suspend the pipe, but the chain gives us the flexibility of easily changing the height of our mist. Burlap or saran shade is then attached on the sides and ends as well as the top by means of 1 × 2 in. pieces of lumber simply bolted to the arches. A 1 × 2 in. board is stapled to the bottom of the burlap or saran. This serves to hold the material in place as well as making it easy to fold the whole side up to work in the bed. If wind is a problem, poly is attached under the burlap of the offending side or end to prevent blowing of the mist or drying the cuttings. The 1986 cost of materials for a 4 × 16 ft bed is about $250. The cost includes a timed mist system and it would take one person about 2 days to build this bed, including the fabrication of the mist system. This sized bed would hold approximately 5000 to 7000 average cuttings.

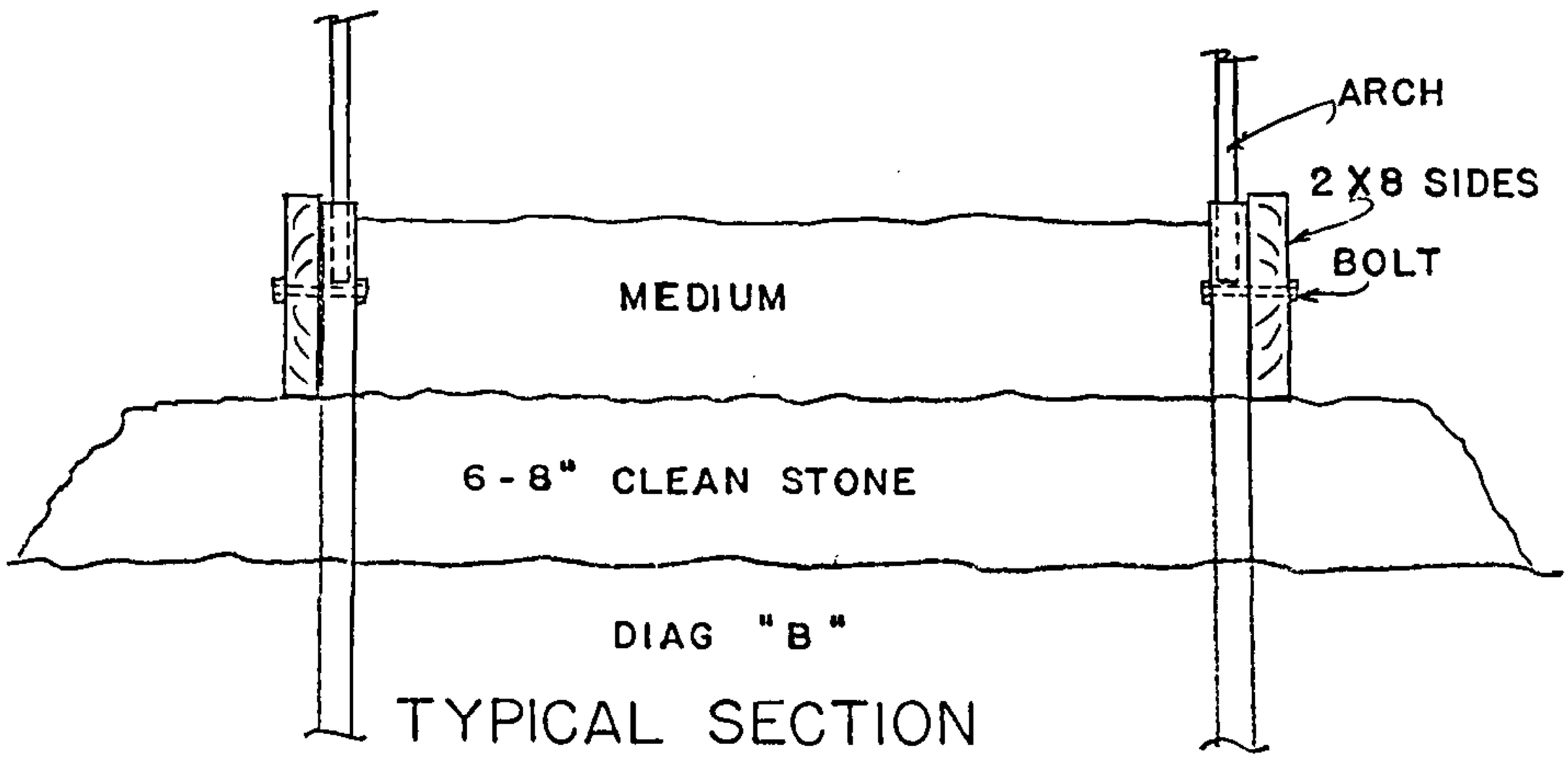
Our season of use for this bed is June through August. It is installed in full sunlight. We overwinter the rooted cuttings directly in the bed by spraying them with Wilt-Pruf in mid-November and apply a thorough fungicide drench in late November. We then remove the arches and cover the whole bed with either microfoam or poly, with a thick insulating layer of hay on top. If your beds are few and small, the microfoam is an expensive way to go; you may want to consider the poly and hay. It is important to use a good weatherproof mouse bait in the bed when you cover it to prevent rodent damage to the cuttings. We transplant the cuttings out of the bed in April.

Our winter hardwood cuttings and our grafts are handled by combining a bit of progress with a bit of history. We have reached into the past and brought forward the old sealed Wardian case concept of propagation. We then simplify it with the use of modern day styrofoam insulation, electrical bottom heat cables, and good old 6-mil poly for a top. We start with the same base stone for drainage as the summer case. On this we build a high sided box of

DIAG "A"

MIST BED PERSPECTIVE





DIAG "B"

TYPICAL SECTION

Figure 1. Details of the mist bed structure as described in the text.

wolmanized wood, cedar, or redwood, to contain our cuttings or grafts (see Figure 2). The top is tapered toward the south to allow for run-off and to maximise sunlight. We have always had these beds inside an unheated standard poly house. Other than snow load considerations there is no reason these frames could not be placed directly outdoors.

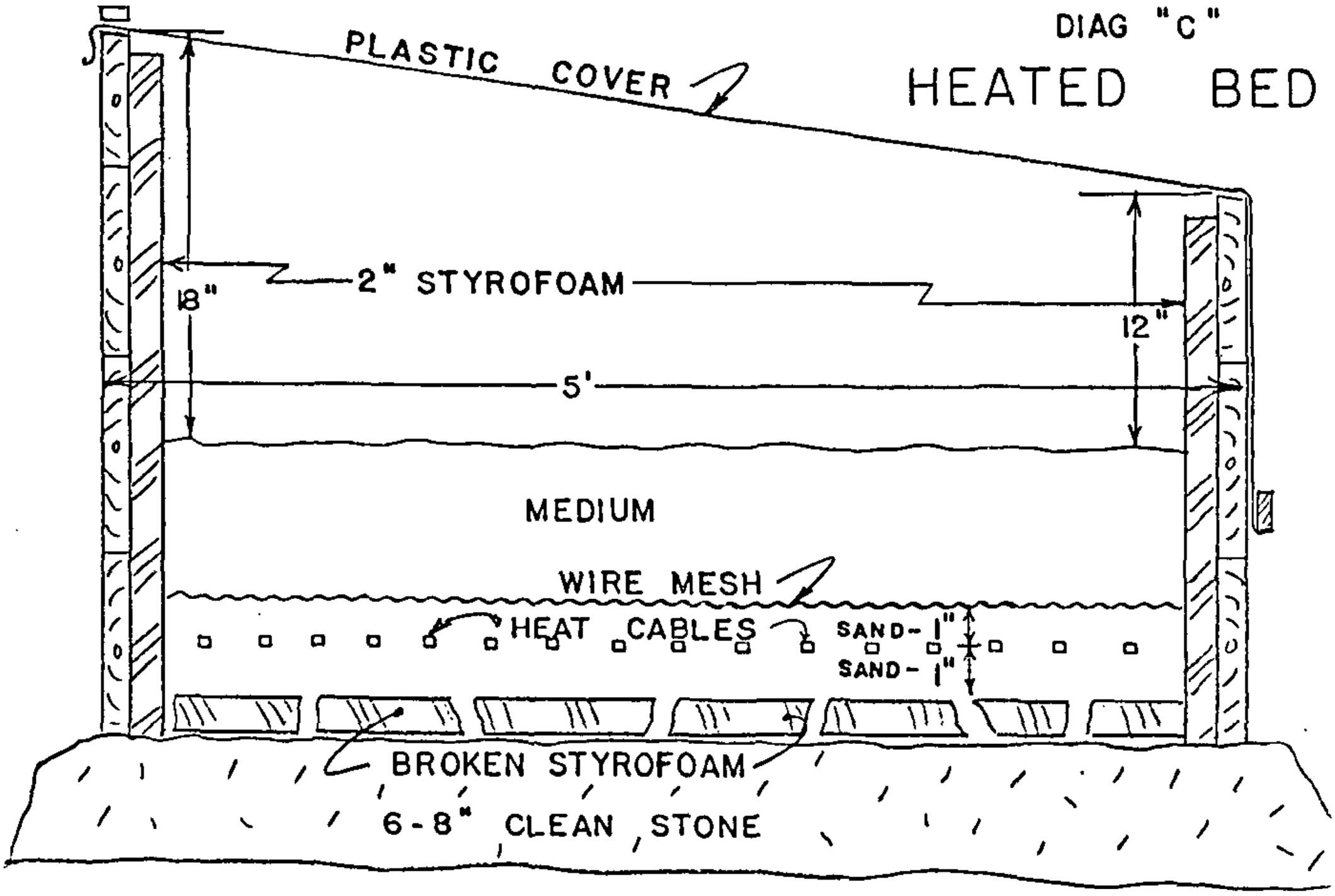


Figure 2. Details of the structure used for handling winter hardwood cuttings and grafts.

On the insides of the walls we nail 2-in. thick styrofoam insulation. Upon the gravel base we place broken blocks of 1-in. styrofoam to give us both insulation and drainage. We then apply 1 in. of clean sand on top of which we lay out the electric heat cables. In our climate (northwestern New Jersey with winter low temperatures of minus 15°F), a standard 60-ft long heating coil will give us enough coverage for a 5 × 5 ft floor area. We make our boxes 5 ft outside width and multiples of 5 ft in length. Each 5-ft section having its own cable, we can then either zone them independently, have them all hooked together, or simply leave an unused section unplugged. After installation of the cables we add another 1 in. of clean sand. It is advisable not to use a peat-sand or perlite mix over the heat cable as this tends to prohibit heat transfer. Upon this 1-in. layer we place a wire screen (½ in. mesh) to prevent a trowel from stabbing through to the electric cables. Directly on top of the screen we apply 4 to 8 in. of a 50/50 sand-peat mix. It is into this mix that we can plunge our grafts or direct stick our cuttings.

The remote bulb thermostat we use to control the coils is a Granger/Dayton #2E399. We mount the thermostat body on the outside wall of the bed, with the bulb in the middle of the bed. The bulb is placed just under the wire mesh for protection and in a representative spot for heat sensing. We are using Cox Model #2263 heating coil—60 ft lengths, 248 watts per length. We use this combination with great success and economy. Our January and February operating cost is about $6.00/5 × 5 ft section/month. This low cost is primarily due to the great insulating value of the styrofoam. We currently have the highest per kilowatt electric cost in the country in our area. Where electricity is less expensive, the operation of this type of bed would be even more attractive. Even with the high electric KW cost we have found nothing that can come near this bed arrangement for low operating cost.

The top of the case is a piece of clear 6-mil poly. Nailed to the high edge, it is allowed to drape down over the lower edge where it is stapled to a 1 × 2 in. piece of wood. This arrangement serves to hold the poly down and allows rolling the poly up when the case is open or when you are ventilating. The poly can be propped open or rolled back to any degree to allow for appropriate amounts of air passage. The seal, when closed, is amazingly good. High humidity conditions can be maintained very easily even during the coldest of weather. The 1986 materials cost to build a two section case (5 × 10 ft) is approximately $200, and can be built by one person in 8 hrs.

We are careful, use appropriate sanitation and fungicides, and have never had fungal problems. For grafting, these beds will give excellent after-graft care. One must, though, use some form of conventional heat on the understocks prior to grafting to initiate root activity. These beds are not designed to be heating powerhouses and should not be used to try to push understocks. We have a small section of a poly house partitioned off and insulated, containing a 25,000 BTU gas Modine type heater that gives us excellent results in preheating our understocks. The operating cost of this heater is minimal due to the short time it is used.

With various combinations of beds as I have described, we successfully and economically produce many thousands of high quality plants every year. Their costs are low to build, and their operating and maintenance costs after building are extremely low. We are very pleased with these structures.

CARMINE RAGONESE: Could you give us the name and source of the thermostat and cable you are using?

CHARLES HILDEBRANT: The thermostat is supplied by W. W. Granger and a source can be found in the yellow pages of most telephone directories. Home base is Chicago, Illinois, but they have many branches. The number of the thermostat is 2E399. The heating cable is from Cox in New York City. The number of the heating cable is 2263.