USABLE CONTROLS FOR EXISTING PLANTS

E. Edward Brown [1]

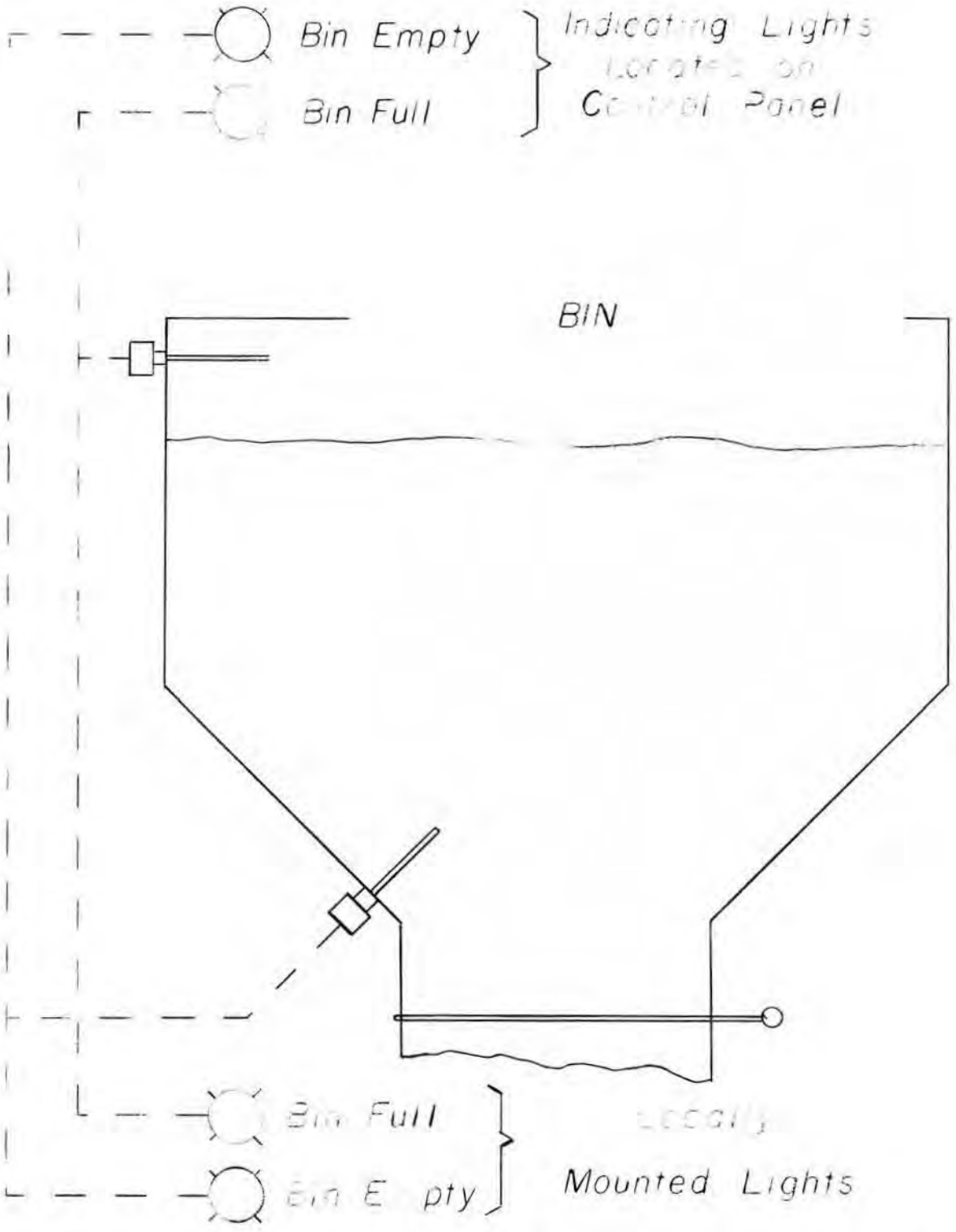
There are newer and better equipment and techniques now available for control of seed during handling operations. These techniques and equipment are applicable to old as well as new plants.

This equipment is generally of all solid state electronic design with no moving parts to wear or to require periodic maintenance and lubrication. This equipment has been made extremely reliable because of the technology gained from the Aerospace Program. Most aircraft and missiles utilize this type device for measuring fuel quantity in their tanks. The redesigned forms for general commercial usage are rugged, reliable, and simple for the layman to install and use. Most manufacturers' designs incorporate plug-in units so that in the event of trouble they can be exchanged like a TV tube with the old unit being sent back for repair. These units can be used to measure any solid or liquid.

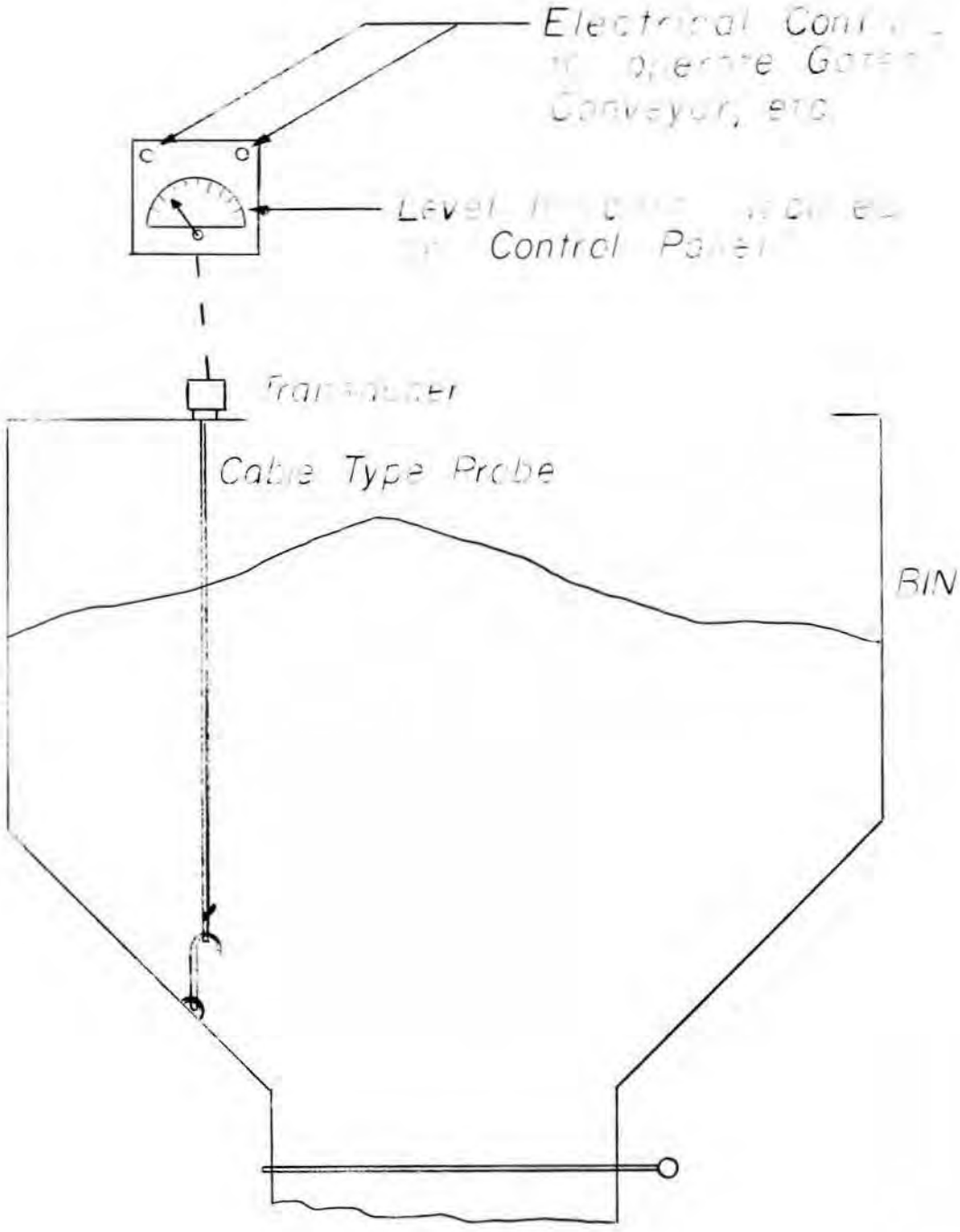
The application techniques are simple and can be easily handled by using common sense. The probe is put in the place you want to make a measurement. That is, if you want to light a lamp when the bin is full, you simply install the unit so that the probe is located at the point where the bin is full. Similarly, if you want to know when it is empty, you place the probe at the empty point in the bin. It is impractical to describe all of the applications and things that you can do with radiation probes. Here I have a few drawings showing some common applications of these units. These should provide you with some basic information on what you can use this equipment for.

---

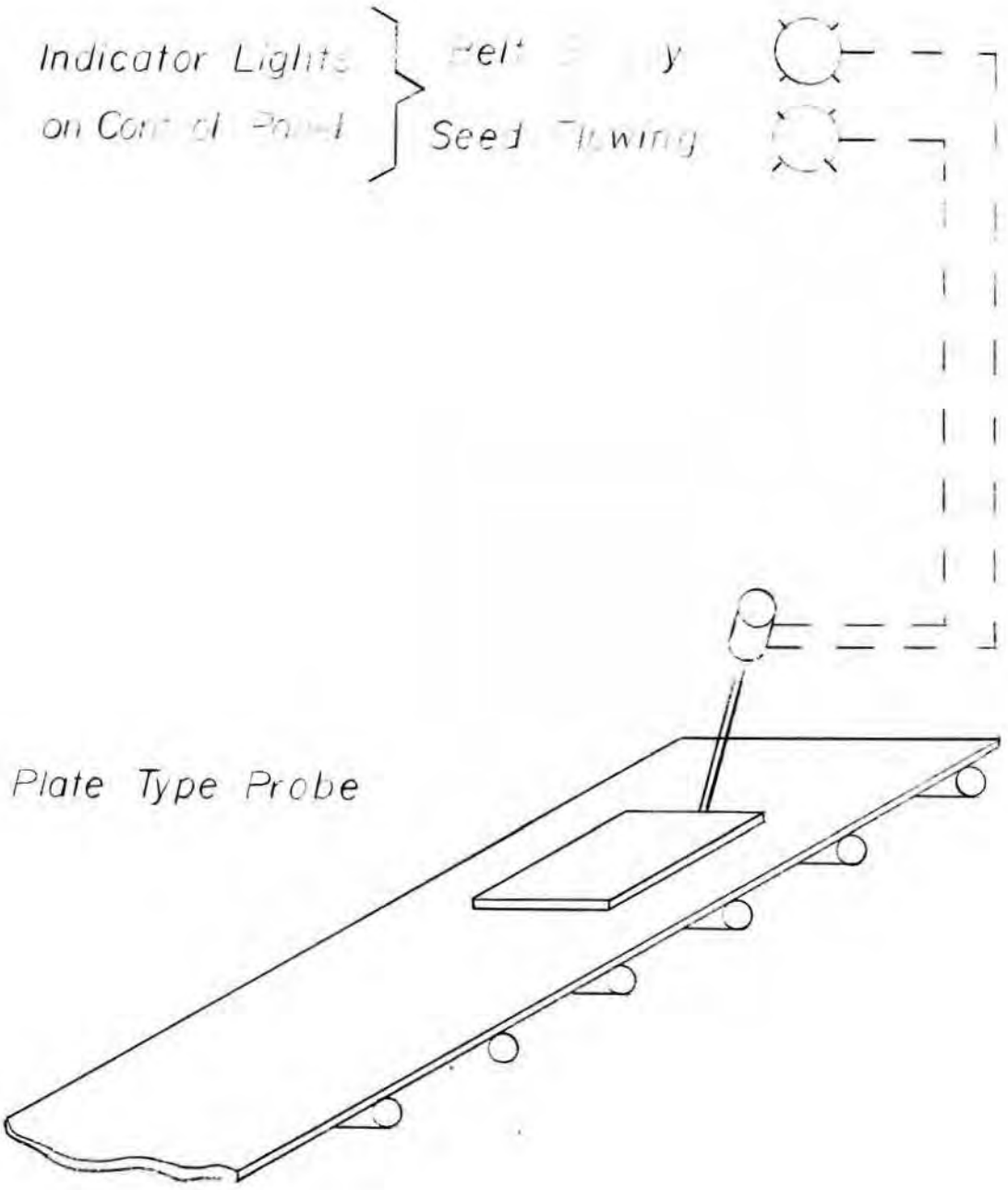
[1] Mr. Brown is a registered professional engineer and owner of the E. E. Brown Instrument Company of Shreveport, Louisiana.



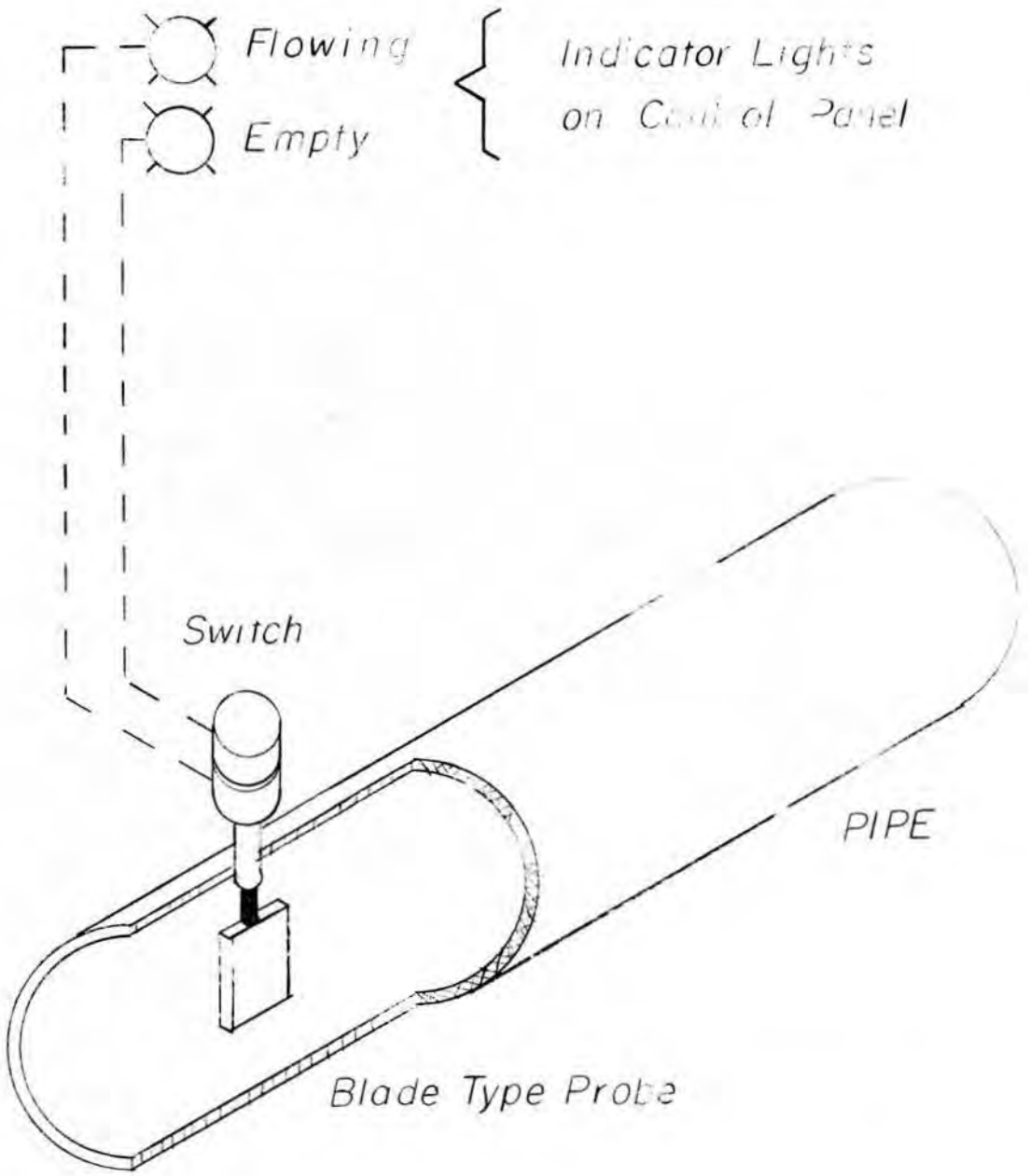
Drawing No. 1 shows how you can use two on-off type probes for indication of the level of seed in a bin. These units can be used for indication only or they can be tied into an automatic plant system and be used to stop and start conveyors, as safety shutdowns, etc.



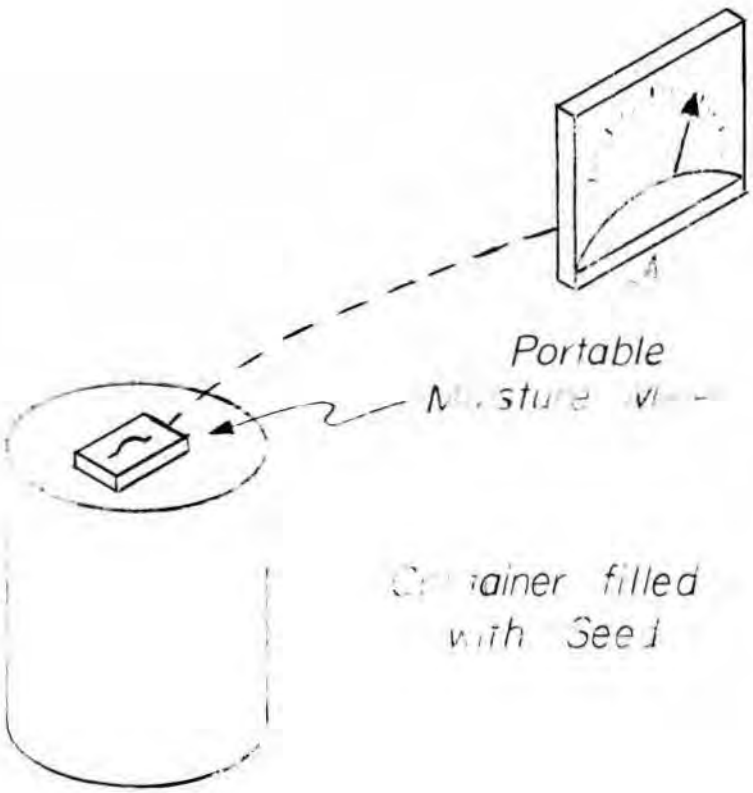
Drawing No. 2 shows the same bin as the first drawing did, using a level unit which continuously displays the amount of material that is currently in the bin. It has a cable type probe which is tied at the top and bottom of the bin. The unit may also be equipped with switches which can be used for the same purposes as the switches which we looked at first. This type level unit does have the advantage that the operator can set the operating points anywhere from full to empty. This feature can be useful as an operating aid to tell him when a vessel is nearly full, empty, etc.



Drawing No. 3 shows how a level switch can be used to determine when a conveyor belt is empty or full. This unit assists the operator by preventing mixing of seed and by getting maximum use out of a conveying system. A flat plate type probe is used for this application.



Drawing No. 4 shows a unit similar to the previous one for conveyor status determination. The same unit is used, however, it is installed in a system where the seed are being pneumatically conveyed.



Drawing No. 5 shows a radiation type device being utilized for moisture content determination on a container of seed. This unit is simply placed on the surface of a bag of seed and the moisture content read from the meter by use of a conversion table. It is portable and can easily be moved from place to place. The device utilizes the slow neutron method of determining the amount of water present.

You have been shown some of the more common uses of radiation type gauges on seed plant applications. They can be used for level and flow sensing; and a special variation of these units can be used for moisture quantity determinations. Use of these units can make you money by preventing loss, by lowering manpower requirements, by maximizing use of plant facilities, and by improving efficiency with centralized control of your plant. I would recommend that you look around your plant and find a place to install a few units so that you can become familiar with their use and application. This will enable you to improve your plant with automation as the need arises in the future.