

THE invention which was to become the cornerstone of the fledgling Allen-Bradley Company is depicted in one of the sections of the mural in our Cafeteria. It is a carbon disc compression rheostat, constructed in 1893 by 15 year old Lynde Bradley. The original unit was crude, but it worked. It consisted of a stack of carbon discs

placed inside a wooden spool. It utilized a carpenter's wooden clamp to vary the pressure on the stack of discs. As the pressure increased, the electrical resistance in the motor circuit passing through the stack decreased. This allowed more current to flow, which increased the speed and power of the motor.

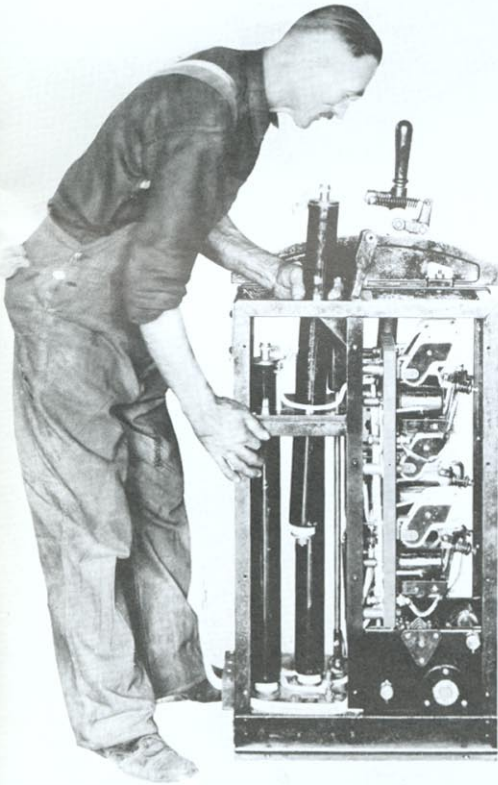
From this humble beginning was

born the Compression Rheostat Company in 1903, the forerunner of the Allen-Bradley Company. The design of the compression type resistance unit evolved into an insulated steel tube filled with carbon discs with a fixed conductor at one end and a movable conductor plunger at the other. The force for varying the amount of compression was

Lynde Bradley's Invention Lives on Today

(But it's going out of production)





One of the company's earliest products was this DC motor controller used to operate industrial cranes in factories. Its compression resistance units could be easily removed for maintenance. The photo was taken in the early 1920s. The man is Roderick "Bill" Arndt, who was Lynde Bradley's "right hand" when experimental bench work was required. Hired in 1916, he was the second oldest hourly employee in seniority when he died in 1953.

The carbon pile compression resistor, the "granddaddy" of A-B products, has been around for some 80 years, attesting to the sustaining quality of our products and extraordinary service to customers. A nylon bearing tip and heat dissipating fins have been added, but basically the product has changed little since Dept. 270's Wally Chlebowski (shown at left) and his father before him assembled the unit. The last orders for the product, which has been obsoleted, are being readied for shipment.

supplied by the direct screw pressure of the rheostat or the mechanical linkage of the motor starter or electrical controlling device in which it would be used. Metal fins were eventually applied to the outside of the tubes to help dissipate the heat buildup within the resistance unit. Most of the early motor control products produced by the Allen-Bradley Company, as illustrated in a 1920 catalog, used this novel device to provide a smooth, stepless method of changing motor current and voltage.

This led to the first Allen-Bradley reduced voltage motor starter and other devices which have evolved into the vast array of control products offered by Allen-Bradley Company today.

After 80 years, we still get orders

Occasionally, we still receive orders for these resistor tubes. Such an order, among the last accepted for production, was recently assembled in Dept. 270, on the third floor of building 42, using an assembly drawing dated 1925. The order was produced for the Clark Equipment Company for application in the starting mechanisms of electric lift trucks.

Though manufacturing methods may differ somewhat today, the tubes have changed little over the

years, testifying to the quality of the original design. One modern addition is the nylon bearing tip on the movable plunger to reduce friction and wear, thus extending life expectancy.

The parts for the resistor tube are manufactured in Dept. 305. The carbon discs are cut from graphite rods and specially treated to produce the specified resistance characteristics.

The Dept. 270 employee who assembles the resistor tube orders is Wally Chlebowski. Coincidentally, his father, Walter, was assigned this same job in the early 1920s. Wally follows much the same procedure today that his father, who is 79, did in assembling the tubes some 60 years ago while he was an A-B employee.

Each assembled resistor tube is electrically tested and calibrated on a pneumatic test stand prior to shipment to the customer. On rare occasions, the department will build the complete rheostat unit that will house the resistor tubes.

Even though the resistor tube is being obsoleted and will soon disappear into antiquity, it is a unique example of an extended product life cycle spanning the entire history of the company.

—Dick Keck



One of the steps in the early days of the manufacture of compression resistor tubes was to fire the discs beneath a mound of electrically heated dirt. Furnaces are now used for this purpose. The discs have continued to be made in the same department, the Powder House, which is in this same location today.