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# Quick Work

By GEORGE J. STEGMILLER, Arch. I

IT WAS about nine o'clock on a dull, dreary evening in the later part of July, when two sub-station operators, Smitty and myself, of the power station, began to get a touch of the thunderstorm that had vaguely threatened us all afternoon.

We immediately closed all windows and doors whereby any rain might enter and come into contact with the many live wires and switches placed all about the interior of the station. Being a conductor of electricity, the rain could cause a great deal of trouble if allowed to come into contact with this high-voltage apparatus. We then checked our flashlights, and the battery lights, which are few in number, being located only above the long switch board where the majority of the controls are. These lights are used only when the electric lights are put out by lightning or other trouble that might occur during the night. They are connected to a large battery in the basement which is always kept charged, and except for being charged by electricity, is entirely independent of it.

Within the next half hour we got our first "surge of electricity." There was a flicker of the lights and one of the eight large motor generators "kicked out," or was shut off by a charge of lightning which struck the overhead wires extending from the station to the power plant. These charges, if allowed to come right on into the station through the wires, would be apt to burn out a transformer or motor generator and cause considerable damage. To avoid this happening, the company has devices such as circuit breakers and relays which operate to break the circuit and protect the costly apparatus, and at the least bit of over-current, will shut off all connections on that particular line from the outside. It is then the operator's duty to find the breaker or relay that has broken contact, set it, and start the generator up again. We knew that if the storm materialized we would have plenty of this to do.

Having at least four of these large generators running at one time makes a considerable amount of noise; therefore the different circuit breakers and relays are connected to a cluster of lights and a very loud bell, which is located near the operator's office in the center of the station. When these break contact, the lights flash on and the bell begins to ring and will not stop until the contacts are closed by the operator. These circuit breakers and relays number more than one hundred, and it sometimes takes two or three minutes to locate the right one.

After resetting the relay and starting the generator up again, we called the main office, or office of the "load dispatcher" as he is called, and reported just what machine had gone out and when, and that it was now in service again. "The load dispatcher," by the way, has a chart of all the machines, transformers, and other high voltage apparatus about the station; and before any of this appara-

tus can be shut off or put into service, you must first communicate with him, except in a case of emergency, such as that which had just happened. In that case, we restore service as quickly as possible, and then report.

Having reported the trouble, there was nothing more to do but to wait for some more, which seemed to be in store for us. And it was in store. For about five minutes later another machine went out, then another with the flashing of light from the switchboard, cracking of breakers and switches, and the almost incessant ringing of the bell. I glanced at the clock and jotted down the time. Smitty leaped to the switchboard. In another second I was with him, and we were both madly throwing switches, setting relays, dodging back of the switchboard and getting in each other's way trying to find the relays that had broken contact, so as to stop that "darned" bell from ringing, and get the machine back in service.

After you do find the relay and get it back in service, the machine sometimes refuses to start, and it is then that seconds seem like hours. Just when we thought we had that "bump" about taken care of, the lights flickered, the machines gave a groan, and there was a crack of lightning on the outside. With the snap of your finger, the lights were out, the four machines that had been running were shut off, and there we were in the dark, and that bell ringing again "like a house afire." We immediately took our flashlights from our pockets, and began to search on the switchboard for the battery light control. Then with our dim battery lights to see by, we began, Smitty at one end of the switchboard and I at the other, to find the many relays that had apparently broken contact. While we were working hard to find these relays, the telephone began to ring. Smitty answered the phone, and it was the "load dispatcher," wanting to know why all the lights were out, and what all the trouble was over here. Smitty told him that the whole station was out, and that he should leave us alone, for we were working as fast as possible to get the machines back into service.

When we finally got the relays all back in order and Smitty was trying to start Number 1 machine again, I happened to notice a pool of water on the floor. Tracing down the water, I found that the water from the sewer was backing up in the drinking fountain and throwing water all over the floor. For fear it would run down into the basement, which is also full of high voltage apparatus, we packed all the rags, papers, or anything that would absorb water, around the top of the fountain. When this had been done to our satisfaction, we hurried back to put in the other three machines. Before we got Number 2 in, the lights came on, which was certainly a great help. We had no trouble at all getting Number 1 and 2 back in service, but Number 3 just wouldn't stay in. When we

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thought it was running all right—bang! It was out again. So I informed the “load dispatcher” that Number 3 machine wouldn’t stay in, and I was told to put a danger tag on Number 3 switch and put in Number 5 instead. Smitty put in Number 4 and I Number 5, and everything looked O.K. again, for the storm had now ceased.

Then with a sigh of relief, Smitty and I settled down in our chairs in the office to take it easy for the rest of the night. Although it seemed like about three hours work, all this took no more than twenty-five minutes. So if your lights go out for five or ten minutes some night, don’t get out of heart, just remember somebody is doing his best to get them back on again.

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