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WEST PHILADELPHIA MANUFACTURING PLANT

April 21, 1926.

Mr. Teele met me at the plant, my visit being made for the purpose of seeing certain departments in operation which had not yet begun to work when I was there in November, 1925.

The finishing department is at one side of a very large room close to the windows. A wide fume pipe runs along back of the acid jars with openings for exhaust ventilation and the suction is very strong. It seems to me an excellent arrangement.

Sand blasting is carried on in tumblers well enclosed and there is little escape of sand - not enough to count in a room of that size. The suction on the grinding wheels is unusually good.

Welding is a difficult problem. It must be done in many different parts of the plant and, although it is possible to protect the welders against the light - and they are so protected - it is impossible to entirely protect the men working near them. At one place I was exposed to three flames at once. Apparently, it is most difficult in tank stock welding. There are screens, but it would be very hard to completely shield every welder. I am also impressed with the exposure to which the man in the traveling crane is subject. It is said that green men suffer most. Certainly, the men who go to the dispensary complaining of irritation of

the eyes are not the welders [illegible] men who work near them, and especially the ones recently employed. I question very much whether they can become accustomed to the glare. It is more probable that they learn [illegible] and I should suggest that new men be carefully instructed by the foremen to refrain as much as possible [illegible] in the direction of the flame. I suppose it would be impossible to induce them all to wear goggles.

Paint spraying interests me very much. Mr. Duffy, the paint foreman, demonstrated to me the method of spraying with a low air pressure, never [illegible] pounds, and in this way preventing the spread of clouds of atomized paint. The only paint which does fly about [illegible] the brown primer, is used in a separate chamber [illegible] in the wall. Here the switch house is placed [illegible] and the man is instructed to stand at right angles [illegible] while spraying so that the draft can catch and [illegible] the fumes. It is very evident from the appearance of [illegible] in the painting department that the paint does fly about, and this is, of course, a very important point, since it is lead paint that is being sprayed.

The medical department is the most beautifully equipped department in any of [illegible] the General Electric, and I mention it only to say that it should be a source of great pride to the Company.

Pittsfield

May, 1925.

F. M. Branson, chemist, assistant to Clark.

D. C. Cox, Dobell, Endicott and J. R. T. Crain and L. C. Thompson of the lightening arrestor department.

C. C. Chesney. works manager, was not there. Neither was F. M. Clark, a chemist in charge of capacitor experimentation.

Capacitor department.- It starts with the making of insulators out of aluminum foil and linen paper wound round and round. Small ones of low voltage are covered with a wax, Cerasin, which comes from petroleum and shale and is practically the same as refined ozokerite. ~~For~~ For insulators for higher voltage holowax is used; this is chlorinated naphthalens and has a higher di-electric constant.

Transil oil is a distillate coming off between kerosene and lubricating oil. There is skin trouble in this department where the men have to get it all over their arms and spill it about. Capacitors must be kept under oil. The work is done in a low basement nine feet high, and there are many treating tanks here with transil oil kept at 100° C. Even on a crisp cool day it is hot here and it is not cold even in winter. The windows open on the railway tracks and must be screened with cheesecloth to keep out the soot. There is one small fan to blow in air. Even for the comfort of the men in summer they deed more forced vehtilation and the room is utterly unfit if a volatile poison like nitrobenzol is to be used, for this enters also by the skin. There are ten wash-bowls for fifty men, an adequate number, but the water is only warm and no soap or towels, even paper, are provided. The men tie rags

provided as cleaning rags on their arms and use them as towels.

The proposed method is this. Nitrobenzol may be used as bought, but may be first vacuum-distilled, then piped from a tank to the vacuum treating tank where the capacitor has already been placed. In the laboratory the best results have been obtained by first washing the capacitor in a pan of NB and squeezing and immersing it several times. The NB will be run in slowly, and when the capacitor is saturated the heat will be turned off and the tank cooled down to 50 C or lower. All this is open. Then a table on wheels is run to the tank, and the full cans are lifted out by means of hooks. No contact with NB is necessary here unless the men slop the fluid in lifting out the cans. This table is run into the next room; it is covered with a metal tray and at present the transil oil spills over a good deal on to the tray. The table is moved to a transfer tank made of galvanized iron about three feet by eighteen inches, and eighteen to twenty inches deep, open, full of NB. The pan with the capacitor is lifted from the table and placed in this tank under NB, and the capacitor slipped out from the can, always while submerged. Various slight adjustments must be made, taking about five minutes, the man working all the time under NB. One man would do about 100 capacitors about two or three times a week. The next step is to slip the can again under the NB, slip the capacitor into it and take it to the soldering table which is covered with galvanized iron with a raised edge to catch the drip. At present, working in oil, the solderers get their hands and arms covered with oil and their clothing also unless they wear rubber aprons. It is hard to do a good soldering job, and leaks are very common.

A lightening arrestor is made by placing together two discs of brass covered on the inner surfaces with insulating varnish which is made of synthetic resin dissolved in denatured alcohol one part, benzol two parts. A porcelain ring slipped between them keeps them apart, and the space thus formed is filled with brown peroxide of lead. A discharge of lightening changes the latter back to litharge, which is a non-conductor.

Red lead is bought in wooden barrels or metal kegs which stand outside the building. They are opened, taken into the building and tipped over to discharge into an open tank about four feet in diameter. There are eight of these, each filled at least once a day. The tank contains water with sodium hydrate. Chlorine from a cylinder is run in through a pipe which opens under the water, and the chlorates and perchlorates which form oxidize the lead. The peroxide freezes solid, then softens and the reaction is over. A semicircular exhaust two or three inches wide runs around the far edge of the tank, half-way round; there is a good draft. The floor is of water-proof concrete draining into a settling tank, but only part of it is wet, and even this is accidental. The peroxide is freed from chlorine and caustic by washing in big tanks into which it is pumped and stirred. Here the floor is of ridged metal plates. At the end of this same room peroxide is made into pellets in an open tumbling barrel lying on its side. The man throws in dry peroxide from an open can, and the pellets which form drop out in a continual stream into an open car; many roll on the floor which is covered with a good deal of brown dust. On a dust-covered flat metal table is an open mill with grinder and seive, and here pellets are ground to fine granules and come out in showers to the pan below. Brown dust lies everywhere. A pipe with strong suction is placed in front and somewhat below the opening of the tumbler; this is adjustable. The motor and belt and everything else connected with the grinder is very dusty. The final shovelling of the pellets back into the tumbler to get them uniform raises a stream of dust,

Advised anointing with castor oil before work, providing bland soap and instructing the men not to scrub, providing towels, and final anointing with castor oil. They use 5 per cent anilline in resin, ground up, melted and spread on paper on a hot plate; only four men work here, and so far they have had no cyanosis.