earlier charts; the pumping engine, though of ample capacity, is working harder than the original pump had to work; both the water and steam pressure lines on the pumping station gauges have approached nearer to the outside circles. Higher water pressure has to be maintained on the pumps to keep up the pressure on the distribution mains. A comparison of the gauge charts from year to year shows this steady gradual increase of the pumping station pressures, and, at the same time, lessening of the pressure at the office and other points on the distribution system. Finally, the pumps are unable to give a proper pressure in the town though they have a capacity even greater than the demand. A new force main is installed, and the original conditions are nearly restored, though the pressure lines are not quite as steady as at first, owing to bad condition of the pipe system. A thorough cleaning of the mains and distribution pipes restores the steady pressure line near the outer edge of the circle. So, the gauge chart tells us when a new pumping engine is needed, when to install a larger force main and feed mains, when the mains need cleaning.

A study of the old gauge charts tells a story, relates a plant history, as old documents or old letter files tell the story of the community. This is especially so if the charts are carefully and properly labelled before they are filed away; the date, the temperature and weather conditions, notes concerning fires, breaks in mains, engine or steam plant troubles, etc.

A frequent examination of the files of old charts should be made, as they tell an interesting and valuable story of the operation of the works, and give valuable hints for needed changes and improvements.

There is now an instrument for ascertaining from the pressure lines on circular charts, the style now mostly used, the average daily or weekly pressures. These results can be conveniently plotted, so as to show compactly the average pressures throughout a year, or many years. The plotting of two or more years on the same sheet, using different colored inks for the different years shows compactly the comparative pressures for the equal seasons of each year. Temperature and weather condition notations would add to the interest of these charts. For instance, the month of February in one year shows a steady and good pressure line, while the same month of the next year shows low pressure and a ragged line. The temperature reference shows for one year a moderate temperature, for the other steady cold weather with extremely low temperatures. Without the temperature record the great difference in pressure would be hard to explain.

Consumption records should also be included, to account for the probable steady decrease in average pressures from year to year. Like the February temperature record, the mid-summer temperature and precipitation records would also tell their story.

Recording gauges are useful in so many ways, give so much information and so good a record of the daily operation of the pumping plant and the condition of the plant, that they are indispensable, and no well-regulated waterworks should be without them, and none can have too many. A superintendent cannot have accurate knowledge of the operation and condition of the plant under his supervision without using pressure-recording gauges. It is false economy to try to do without them. The cost of installation and maintenance is small, trifling, as compared with the benefits.

Pressure-recording gauges require little care, if daily charts are used, and they give the best records—daily changing of the charts, winding the clock, and filling the pen, are all that is necessary. The supply pipe should be blown out occasionally, to keep it clean, and the clock kept regulated, so that the time records will be accurate. This last item is important, should disputes arise, concerning pressures at time of fires, particularly in towns where an increased fire pressure is required. The rise of the pressure line in the chart should disputes arise, concerning pressure at time of fire alarm. In this connection, some care must be exercised in placing the charts, to see that they start on the correct time line. Some troubles have been caused by carelessness in this, occasionally, for some unapparent reason, the gauge chart does not revolve, though the clock is going. This may be due to careless securing of the chart, or to putting in two charts at once, the under one revolving all right, but not receiving the impression of the pen or pencil, the outer one slipping on the smooth surface of the lower one and remaining stationary.

DANGERS OF ACETYLENE GAS

"That acetylene gas lighting plants require most careful handling and that no such plants should be installed or maintained in the basement of any buildings—these are the lessons taught by the recent catastrophe at the hotel at Macoun." says Fire Commissioner R. J. McLean, of Saskatchewan, in a recent bulletin.

Hitherto too large a measure of indifference and consequent carelessness have existed in regard to both gasoline and acetylene. No more than a passing thought has been given to the explosive qualities of either and whether location of such plants inside buildings materially affects the risk of life and property has received scant consideration.

In view of this disaster public interest has been aroused and advantage is taken of the opportunity by the office of the Saskatchewan fire commissioner to indicate the nature and danger of acetylene. Its advantages as a light in cases where electricity is not available are undoubted. Amongst them are the following: The light is brilliant and colorless, the flame gives off less heat and poisons the air less, its odor is so strong as to be easily detected, its vapor is so light as to be readily dissipated, the bore of the burners is so small as to permit very little of the gas to escape.

On the other hand its dangers are so great as to demand the strictest precautions as to the conditions of generator, storage tank and piping and also to location of these. As a gas it is so highly explosive that air containing one-thirteenth as much acetylene is more explosive than gunpowder. Acetylene is produced by the union of calcium carbide and water. The water may be fed to the carbide or vice versa, but feeding the carbide to the water is much safer. In either case any generation or superfluous gas, due to lack of feed control, is highly dangerous. The danger is generally near the generator. A defective feed tube or the opening of a seam, caused by the freezing of the water seal, may cause an escape that has only to come into contact with a light, a red hot cinder or even a pipe in a smoker's hand to do more harm than dynamite.

Should an acetylene generator—or even a gasoline carburetor—be permitted in any basement of any home or public building? is the question which is being asked to-day, and the answer is, No, any such installation is not advisable. All such generators should be placed outside at a safe distance. Whatever difficulties may arise as to the methods of heating such outside buildings—an acetylene machine will freeze if placed in a building that is not warmed—are such as should be overcome at all costs as compared with the danger of having an inside installation. It is better to be safe than sorry.

The Macoun disaster cost ten lives and as many injured and the absolute destruction of $35,000 in property. A leakage from an unknown cause, coupled with the presence of a fire in the furnace or an open flame in the same basement was the origin of the explosion. There are many homes, churches, and public buildings in Saskatchewan lighted by acetylene. No thought is given to the danger, and no thought was given to this sad case. An appeal is hereby made for safety first and safety all the time. Consider the danger to human lives and property and guard against it.