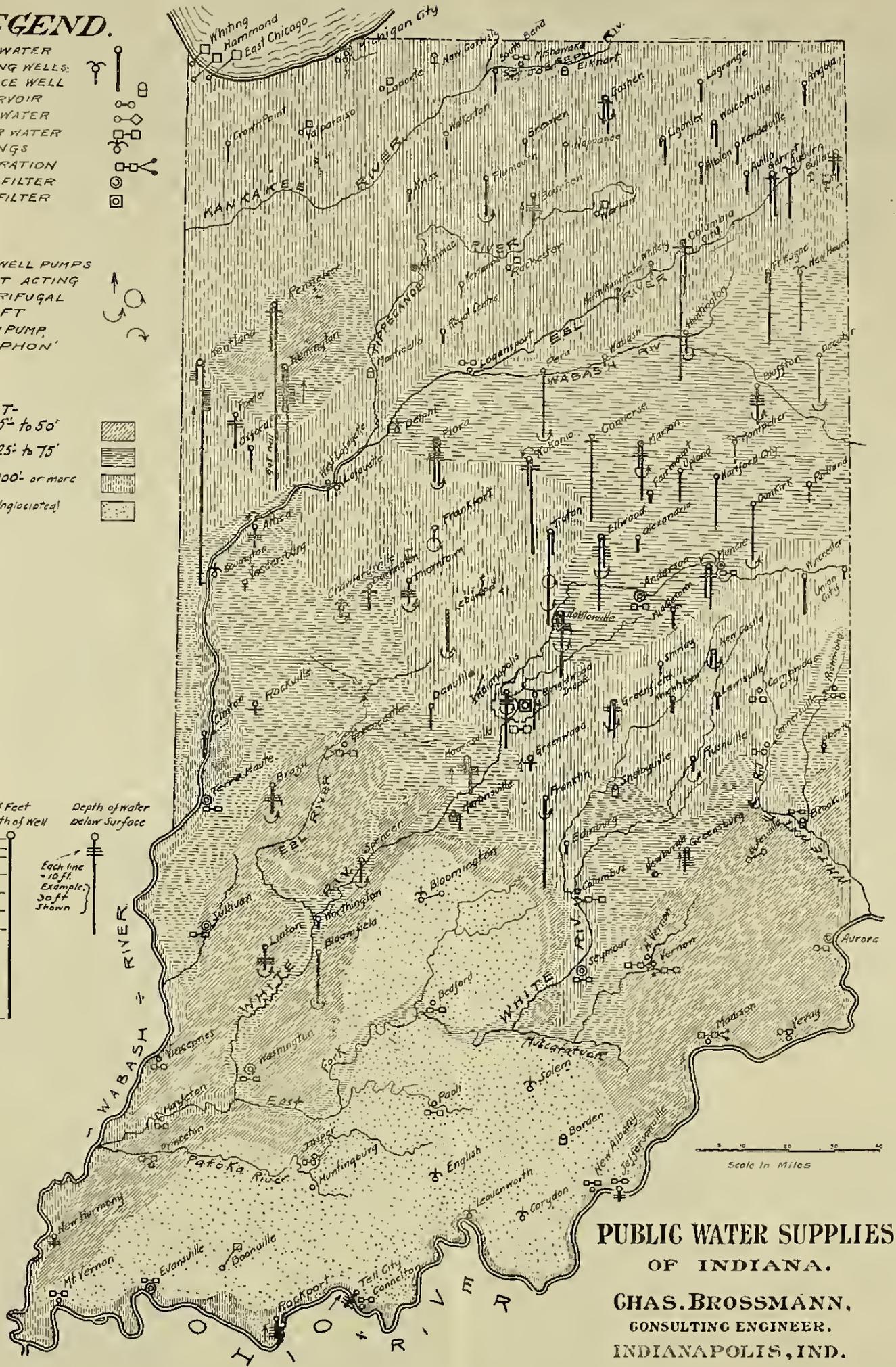
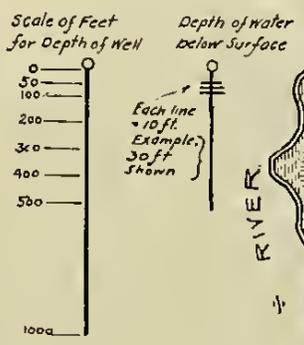


LEGEND.

- WELL WATER
- FLOWING WELLS:
- SURFACE WELL
- RESERVOIR
- LAKE WATER
- RIVER WATER
- SPRINGS
- INFILTRATION
- MECH. FILTER
- SAND FILTER

- DEEP WELL PUMPS
- DIRECT ACTING
- CENTRIFUGAL
- AIR LIFT
- VACUUM PUMP,
- OR SYPHON

- DRIFT-
- About 5' to 50'
- About 25' to 75'
- About 100' or more
- Rock (Unglaciated)



**PUBLIC WATER SUPPLIES
OF INDIANA.**
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WATER SUPPLIES OF INDIANA.

BY CHARLES BROSSMANN.

More than 60 years have passed since the first Municipal Water Works of the State were installed at Madison, Ind. Since then, many plants have been erected. Our complex life and increasing population has necessitated new methods of living and caused new demands; the most important among them being good water. At present there are few towns of any size that do not have public water supplies.

In the year 1896 there were about 50 plants in this State and at the present time there are over 150 plants. It has not been possible to get information on all plants, but the figures represent a very healthy growth. The town pump and historic oaken bucket are being abandoned, and the more convenient and usually safer public supply is being gradually adopted. The supplies for public use as a rule are more carefully selected and situated and taken from a source less liable to contamination than are the individual surface wells of the householder.

The installation of a water works plant usually is followed by the installing of sewers, which is a great asset to the sanitary conditions of any locality.

Of the water works here charted approximately 65% are well systems, 15% river, and the balance springs, flowing wells, lakes, open wells, etc. About 60% of the plants are municipal plants and the balance operated by private companies.

The arrangement and method of charting the supplies has been undertaken with the hope that it may be the start of a more complete investigation and record, and that such contributions or additions may be made from time to time as will increase its value as a water supply record of the State. The author's studies in this line have taken into consideration the mechanical equipment of the plants using these supplies, but it is not the intention to go into this part other than to show on the map the method of procuring the subterranean supplies of water. The map of the State before mentioned shows the various sources of supply, the method of pro-

curing same, and how they are prepared for use. The well supplies are shown, giving the depth of well, the level of the water (where it has been possible to secure same), and roughly the depth of glacial drifts as found in that section; the drift depths are as given by the United States Geological Survey.

North of the Wabash river the depth of drift is approximately 100 feet or over, the best wells being usually in this material. Quite a portion in the western part is the region of extinct lakes. An interesting comparison occurring in this extinct lake region, is the supply of Kentland. This town formerly had its supply from a well about 1,200 feet deep, the water having a strong odor of sulphur. The water in this well stood 72 feet below ground about six years ago. Last year it was 120 feet below ground when pumping, and owing to this great lift caused much trouble and expense in pumping same.

This year a new plant was installed at Kentland. A new site was selected about one-half mile from the old well. The wells were drilled to a depth of 87 feet when rock was encountered. The last 15 feet of the well was in white sand, and produced a clear sparkling water without taste or odor. This installation is of interest as it shows such a difference in the two wells and their product.

From the south of the Wabash river to the Ohio the drift varies from 5 to 100 feet in depth, except for a triangular shaped section, with the apex below Martinsville, which is practically in the rock section. The water works of English in this region are of more than passing interest, as the supply of the town is secured from an elevation high enough to give pressure without pumping.

It will be noted on the map, that of supplies shown in the rock country, the majority are springs or river supplies. The procuring of water in quantities sufficient for public use is in some parts of this district a very difficult problem, especially in dry seasons.

The water of the State can be divided into two main classes, surface and subterranean supplies. The surface supplies comprise the river, lakes and large surface wells or reservoirs and may be divided into the filtered and unfiltered classes. The subterranean waters consist of the deep wells, flowing or unflowing, and springs.

The most noteworthy characteristic of the surface waters is that they are as a rule softer than the well waters and after filtration usually make a very satisfactory supply. The well waters as a rule are harder and in

numerous places give trouble from this cause, often making it impossible to use them satisfactorily for steam purposes.

Muncie uses well water. The raw water is heavily impregnated with iron which is treated by aeration, which puts the supply in a satisfactory condition.

An important condition found in the well supplies has been the information secured showing the lowering of the water level at various places. This occurs in a number of localities, some of which are herewith mentioned.

Towns.

Kentland (old gas well).....	48 feet drop in 5 years.
Elwood	40 feet drop in 12 years.
Greensburg	40 feet drop in 10 years.
Muncie	28 feet drop in (time not given).
Remington	8 feet drop in 10 years.
Marion	6 feet drop in 20 years (cause of the fall at Marion is given as due to waste from other wells).
Butler	4 feet drop in 10 years.
Bourbon	3 feet drop in 8½ years.
Linton	Some wells show 30 feet drop in 6 years.
Kokomo	Some wells have dropped 15 feet since 1895.

It is a long step back to the time when there was nothing but water over what is now Indiana; but now, over that same area the procuring of water is an engineering problem of some importance.

The gradual receding of the water from the inundated area took place, of course, through a great length of time, but even after the waters became confined to their individual channels, such as our present day rivers, the point of saturation of the earth has been lowered by natural and artificial causes, such as deforestation, large drainage and reclamation works and the drainage of farm lands. Records from the weather bureau show that the rainfall for the past twenty years has not decreased. The question of run-off, however, is more important, as this undoubtedly has been, and is becoming more of an important factor each year.

A systematic method of recording all supplies in the State and tabulating all data pertaining to old as well as new supplies would be of great value. This could be best undertaken by one of the departments of the State and this information is here presented as a nucleus for the same.

