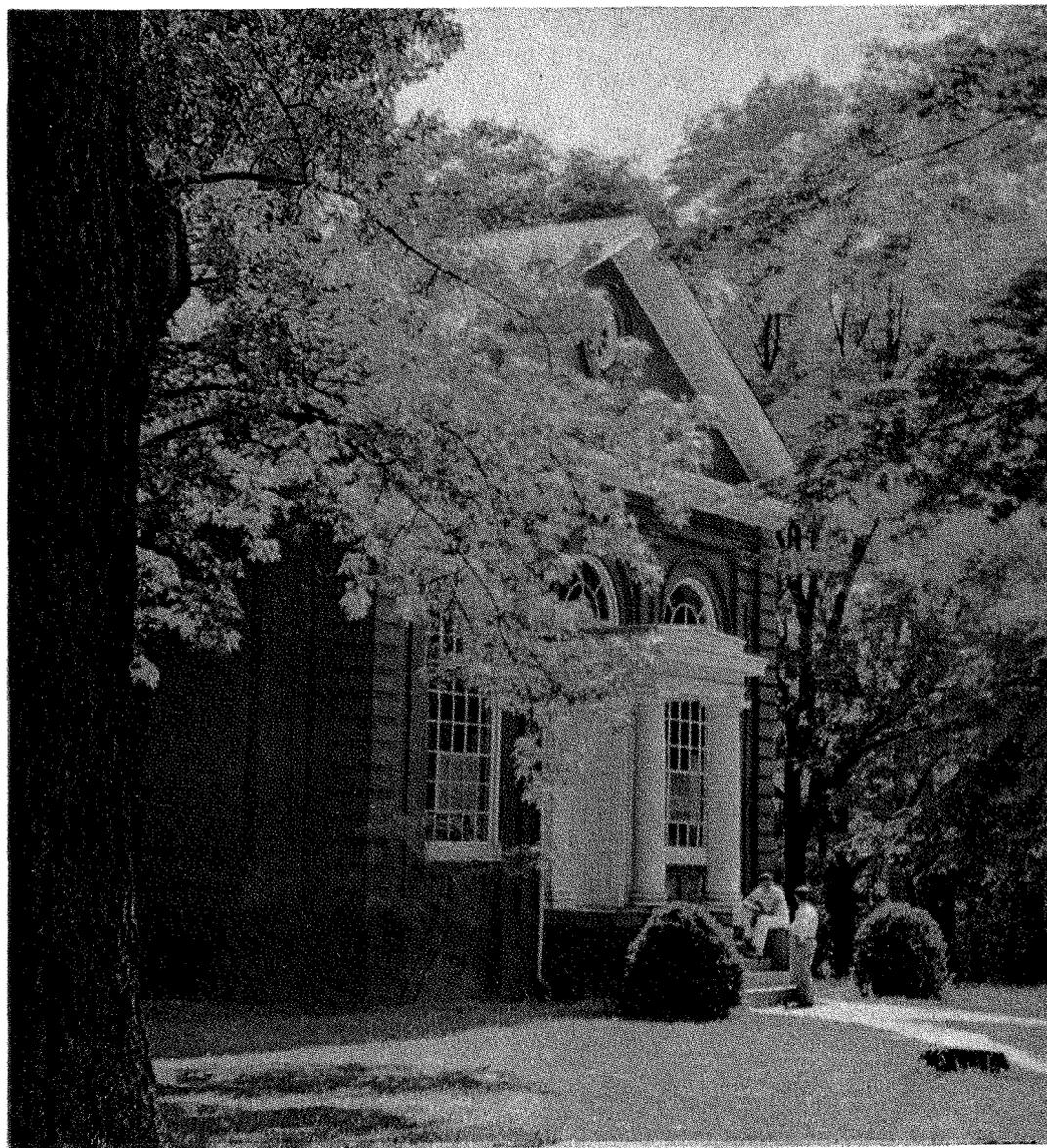


*The*  
**IRON WORKER**



The Library at Hampden-Sydney College

**WINTER — 1953-54**



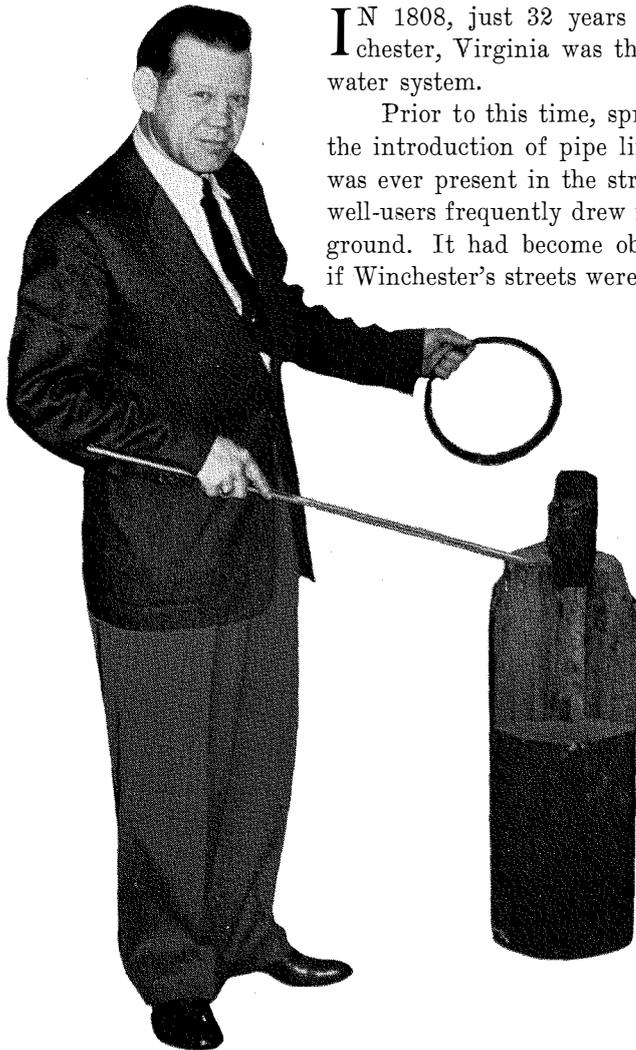
Shawnee Spring (sketched from an old print). First used by the Shawnee Indians before Winchester came into existence, this spring found use centuries later, in 1930, when its water was incorporated into the municipal system.



The Town Spring (sketched from an old print). From this spring was laid the first pipe line for a public water system in the United States. This was done in 1808 and the pipes were made of logs connected by iron couplings.

## A Modern Water Supply for Historic Winchester

By R. H. LEMMON, *Pipe Salesman*



A section of the original wooden pipe laid in Winchester in 1808. Mr. S. L. Grant, Winchester City Manager, shows how the log pipe was fastened together. The iron sleeve (to which he is pointing) was on the inside while the iron ring (which he holds in his left hand) was on the outside.

**I**N 1808, just 32 years after the signing of the Declaration of Independence, Winchester, Virginia was the first town in the United States to lay pipe lines for its public water system.

Prior to this time, springs and wells constituted the town's water supply. Actually, the introduction of pipe lines was primarily to counteract a nuisance—excess water which was ever present in the streets. This objectionable situation resulted from the fact that well-users frequently drew more water than they needed and poured the surplus on the ground. It had become obvious that a more satisfactory water system was imperative if Winchester's streets were to be anything more than mudholes.

To supply the necessary pipe, since none was being manufactured in this country at that time, a Dr. Brown introduced a horse-driven device for boring logs. The logs used were approximately ten inches in diameter. A two-inch hole was bored through those used for the main line, while a one-inch hole was bored through those used for service connections. The ends of these wooden pipes were joined by short iron sleeves on the inside and iron bands around the outside.

This initial water system operated by gravity flow and extended from Town Spring on Amherst Street down to Loudoun Street. The citizens along this line opened ditches in front of their property and the corporation furnished the log pipe and laid them.

In 1826 the first cast iron pipe was used. This was a six-inch line from Town Spring to Cameron Street.

In 1891 a second source of supply, Rouss Spring, was brought into service by the installation of a steam-driven pump and a ten-inch cast iron force main through the south end of town. This main led to a 300,000 gallon reservoir which acted as a stand pipe and water was distributed to different sections of town by branches from the ten-inch main.

In 1915 the old steam-driven pump was replaced by an electrically-driven centrifugal pump and in 1920 storage capacity for the system was increased by con-

A winter scene of the North Fork of the Shenandoah River, looking west. The small dam on the left and the concrete structure at right are both part of the raw water intake section. The flow of the river is such that only a small dam is necessary to impound the required supply. The contractor for this is Glenn Construction Company.



struction of a 3,000,000 gallon concrete reservoir. This was built about 500 feet west of the old reservoir.

During the 1920's the growth of the town and the increased use of water made the problem of an inadequate water supply increasingly apparent. Numerous studies, reports, and recommendations were made, but it was not until 1930 that an additional supply was secured. This new source was Shawnee Spring and the water from here was piped to the Rouss Spring sight and impounded. The acquisition of Shawnee Spring necessitated the construction of a filter plant, since water from this spring was not pure enough for drinking.

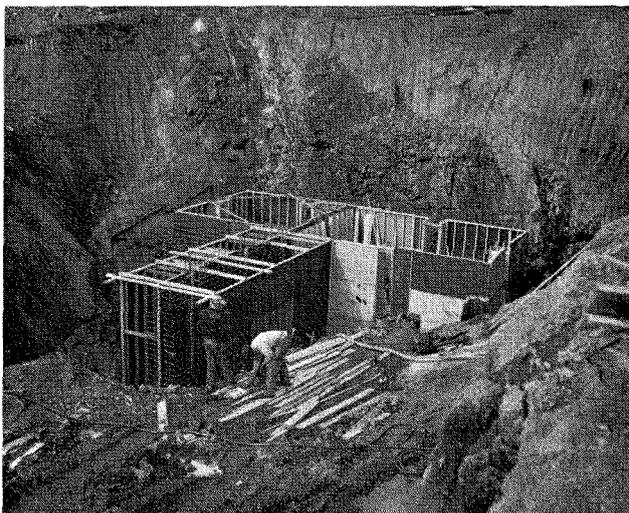
In 1932 additional water was obtained from Town Spring as its gravity system had never been connected with the other city lines. At this time a pump was installed and the systems were tied together so that all available water could be used. Also, water meters were installed on all service lines to further aid in conserving the supply. During the next ten years no additional supply was obtained for use in the system.

The City Council, however, was not idle during this

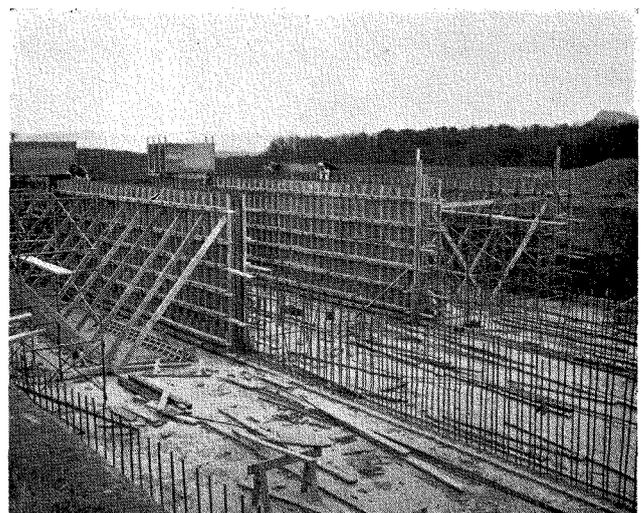
period. A belt line to encircle the entire city was proposed and work was begun. This, with tie-ins at all streets, ensured a more adequate method of distribution. Also, many ideas for general improvement and for conserving the available water supply were incorporated.

In 1942 an additional supply of 1,000,000 gallons per day was secured from Fay Spring. At this time the city began operating on a system fed by four springs. Water was pumped from these springs into the distribution system and two elevated reservoirs. The supplies from Rouss and Shawnee Springs were impounded in a surface reservoir at Rouss Spring and then pumped into the distribution system while the supplies from Town and Fay Springs were pumped directly into the distribution system. The maximum supply obtainable from these springs amounted to approximately 4,500,000 gallons per day and this was quite satisfactory for the city's needs.

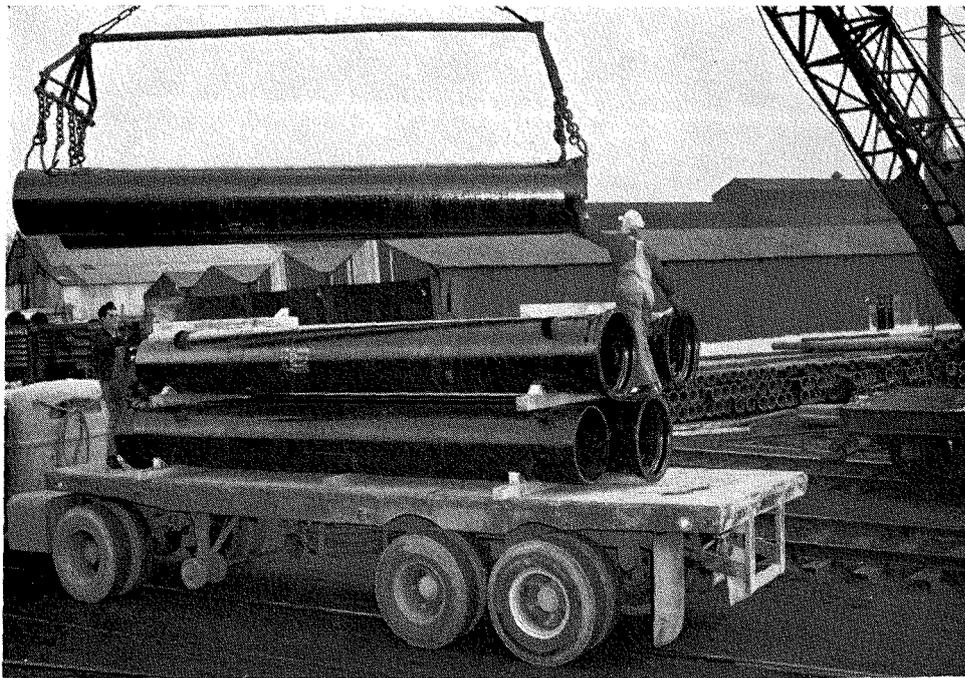
Over a period of years the demand for water steadily increased until the peak consumption approached 4,000,000 gallons per day. Also, during these passing



Preliminary construction of the low level pumping station being built by Glenn Construction Company. Water will be conveyed from this point to the filter plant approximately one mile away.



Filter plant construction under way as concrete forms and reinforcements are set by English Construction Company. At this point water received from the pumping station will be filtered and purified.



A truck load of 24-inch cast iron pipe being loaded at Lynchburg Foundry Company's Radford Plant for shipment to Winchester, Virginia. A total of 84,000 feet of 24-inch pipe is being furnished by LFC for the new Winchester water system.

years, it had been learned that in times of drought the flow from the springs would yield a maximum of only 2,800,000 gallons per day. The question of an adequate water supply became more and more critical and the job of administration, operation, and maintenance of the Water Department became increasingly complex.

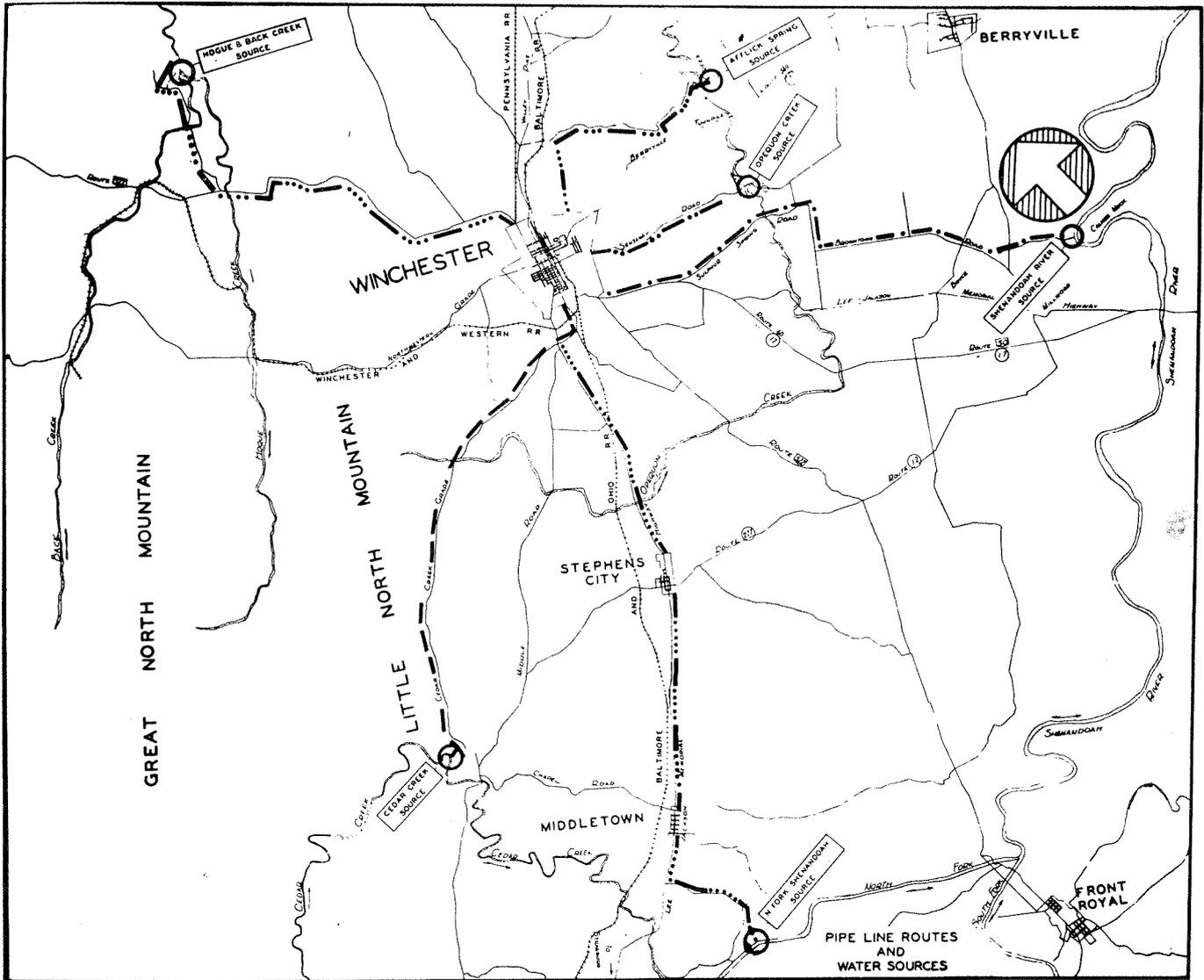
Until 1948 Mr. S. L. Grant, Winchester City Manager, also held the position of Superintendent of the Water and Sewer Department. At this time it became evident that the problems of this department required the services of a full-time employee, and Mr. S. H. Reaves, a man with extensive experience in this field, was em-

ployed. Under his direction a periodic water meter inspection and repair program was installed. This program not only effected an additional revenue to the city but also aided in locating many unknown leaks.

At the request of the City Council a report of the possible sources of an adequate water supply was presented in 1950 by Mr. M. H. Klegerman of the engineering firm of Alexander Potter Associates. This was a most comprehensive report in which all possible sources for water were individually considered and evaluated on the basis of an adequate supply for the City of Winchester until the year 1980. Both the possibility of additional



A cross-country stretch of LFC's 24-inch cast iron pipe awaiting installation between the filter plant and Middletown.



The above map shows possible surface water supplies which were considered for Winchester. The source finally chosen was the North Fork of the Shenandoah River (bottom right). The pipeline runs across country to Lee-Jackson Memorial Highway (U. S. Route 11) near Middletown and northeast along the route through Stevens City to Winchester. Construction of this supply line is now nearing completion.

springs, as well as various surface streams were considered.

Although nine available springs were found in the vicinity, only one of them possessed a substantial flow. This flow amounted to approximately two million gallons per day and it was estimated that if it were tied in with the present system the city's requirements would be satisfied only until 1960. Therefore, it became necessary to consider one of the local surface supplies as a possible source. Five such supplies were evaluated in an endeavor to locate one of adequate capacity and quality to supply the specified requirements. Calculations indicated that three of these sources, Cedar Creek, Opequon Creek, and Hogue and Black Creeks, would not be satisfactory without impounding storage. Also, the supply from these sources could not be economically increased in the future.

The two remaining sources under consideration were the Shenandoah River and the North Fork of the Shenandoah. It was determined that the Shenandoah River as a source would require relatively high pumping heads and that a large volume of pollution material,

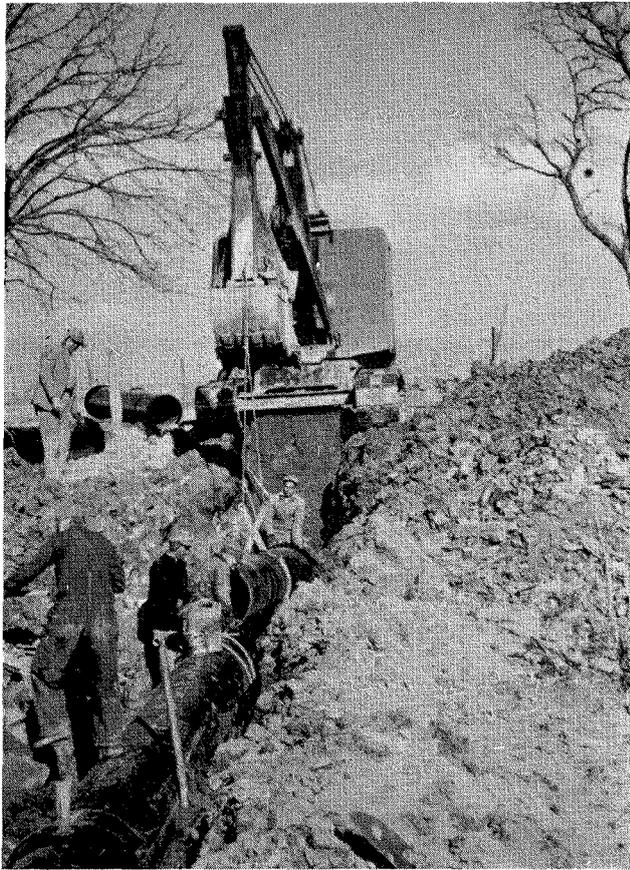
introduced from the South Fork of the river, would place a heavy burden on the treatment facilities.

Evaluation of the North Fork of the Shenandoah indicated a plentiful supply which could be readily increased in the future by stepped-up pumping. Furthermore, the quality of this water, although filtration and chlorination would be necessary at all times, was superior to all other sources considered.

Thus, in 1950, the engineers' recommendation for a new water supply from the North Fork of the Shenandoah River was accepted and they were instructed to proceed with plans and specifications.

Necessary land and rights-of-way were purchased by the city and in 1952 the plans and specifications were presented to the Council and accepted. After a year's delay because of the city's debt limitation, a favorable bond referendum for \$3,000,000 was held on April 13, 1954.

On June 23, 1954 awards were made on all contracts to the low bidders. In accordance with the final plans water would be taken from the North Fork of the



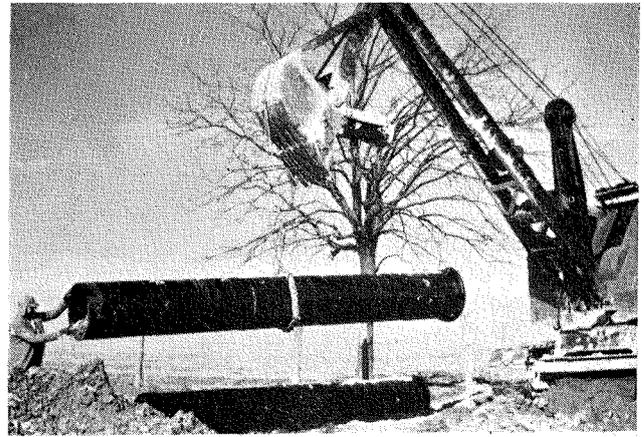
Rough going in shale during supply line installation by M. J. Bles Construction Company.

Shenandoah at a point three miles east of Strasburg, Virginia and pumped from there to the filter plant located about two miles east of U. S. Highway 11. From there the treated water would be pumped through a 24-inch cast iron pipe line west to Route 11 and then to the north along the highway through Middletown, Stephens City, and into the city of Winchester.

At the present time work has begun on all contracts and much progress has been made.



Construction workers lower a section of 24-inch pipe into the trench. Boyd and Goforth Construction Company are the contractors here.



A workman cleans the spigot end of a pipe before installation.

As to the future of Winchester, Mr. James R. Wilkins, President, Winchester-Frederick County Chamber of Commerce, offers the following comments:

"With completion of facilities for the new water supply in Winchester, the city girds itself for a century of growth. It will provide Winchester and Frederick County with excellent sites for industry.

"Ideal conditions exist for new industry along U. S. Route 11 from Winchester south to Middletown, since this highway is paralleled by a natural gas line and rail facilities. The new water main along this route provides a great additional advantage to this area.

"A major factor in the choice of Winchester as a town site more than two centuries ago was water—the excellent natural springs in the area. Today, as Winchester enters its third century, an excellent new water supply will contribute tremendously to the city's growth."

#### ACKNOWLEDGMENTS

For assistance in the preparation of this article, the author is indebted to the following sources: Mr. S. L. Grant, Winchester City Manager, Mr. S. H. Reaves, Superintendent of the Winchester Water and Sewer Department, and the "Report to the City of Winchester," by Alexander Potter Associates.



The operation being performed here is that of caulking a 24-inch bell and spigot joint prior to pouring a sulphur base compound.