The maximum flood discharges this year, obtained approximately at Elora, at St. Jacobs on the Conestogo, at Bridgeport, at Galt, and at Brantford, demonstrate that if a flow of 12,000 to 15,000 cub. ft. per second for 48 hours can be held, flood control is entirely practicable, and enough water can be stored to give a minimum flow of 400 to 500 cub. ft. per second throughout the low water period and therefore throughout the year.

The drainage area of the main river above Waterloo Township is approximately 460 sq. miles, and that of the Conestogo River to its outlet approximately 330 sq. miles. Precipitation on this area is indefinitely known; it is taken to be between 30 and 40 inches of water per annum. On run-off there are no data. It appears likely that the minimum run-off is not under 12 inches of the precipitation, and this for 600 sq. miles of drainage area would give sufficient water.

A dischargeable storage capacity of two and one half billion cubic ft. would be ample to effect the desired purpose. This would mean an area of 5 sq. miles with 18 ft. average depth. It could be in several separate basins. The first thing to be ascertained is whether the topography of the river valley offers suitable basins and in location with enough contributary drainage area. There are various sites that appear to be well adapted.

The minimum summer flow on the lower part of the upper river (from a drainage area of more than 800 sq. miles) has been under 40 cub. ft. per second, while the maximum flood flow this spring at the same place was approximately 24,000 cub. ft. sec.; the low water flow one-sixth of one per cent. of the maximum flood flow.

A sustained flow of 400 to 500 cub. ft. sec. would mean a gain of 4,000 to over 5,000 h.p. on existing water power developments on the lower river alone and there would in addition be large available horse power, below the range of lowest level, at the storage basins. The gain in water supply, sanitation, and general benefit, due to well sustained flow of the river would be inestimable.

GRAPHITE MINING IN CEYLON.

An interesting account of the methods of mining graphite in Ceylon, the largest producer of this useful mineral, is contained in an advance chapter on graphite by Edson S. Bastin, of the United States Geological Survey, from "Mineral Resources" for 1911. The graphite is mined either from open pits or through vertical shafts connecting with underground workings. Most of the mines are not deeper than 100 feet, though a few go as deep as 400 or 500 feet. In a few mines steam pumps and hoists are employed, but as a rule the mining methods are still crude, the acme of mechanical ingenuity being reached in a windlass operated by five or six men for hoisting the graphite in a sort of tub. The workmen usually ascend and descend by means of rough wooden ladders, tied with jungle ropes, and rendered exceedingly slippery by the graphite dust and water.

The mineral as it comes from the pits is conveyed in bags to a dressing shed, where it is picked over and the impurities reduced to 5 or 10 per cent. It is then packed in barrels for transportation to Colombo or Galle. At these ports it is unpacked and submitted to further treatment known as "curing." The graphite merchants have fenced yards or "compounds" for the final preparation of the graphite for the market. The large lumps and the screened pieces are broken with small hatchets by Singhalese women to remove the coarser impurities, such as quartz, and are then rubbed by hand on a piece of wet burlap, and finally on a piece of screening to give them a polish. Finally, various grades coming from several mines or differing in size or texture are blended to meet the requirements of purchasers.

The poor material is usually beaten to a powder with wooden mauls or with beaters shaped like a rolling pin and is then sorted into different grades.

One of the most important uses of graphite is for lubricating. The addition of graphite to oil results in a lower frictional resistance than would be obtained by the use of oil alone. The quantity of oil required for a given service is also reduced and a lighter grade of oil may be employed without decreasing the quality of the lubrication. A small quantity of graphite only is required, and the benefits derived from its use persist long after the application has ceased. Both the amorphous and the crystalline varieties of natural graphite are extensively employed for lubrication.

The use of graphite in the manufacture of pencils is probably both its oldest and its best-known application. This industry in Germany and England is several centuries old, and many of the modern factories manufacture hundreds of varieties of pencils, yet the percentage of graphite used for this purpose is not large, being undoubtedly less than 10 per cent. of the world's production, and one authority estimates it as low as 4 per cent.

The manufacture of artificial graphite is conducted by means of the electric furnace, an anthracite coal carrying small amounts of evenly distributed impurities being the material from which the ordinary grades are made. For obtaining the purest grades of graphite, petroleum coke is substituted for anthracite. The process for the manufacture of graphite was patented in 1896 and its commercial development has been so rapid that at present the output of artificial graphite in the United States is greater than the whole domestic production of natural crystalline graphite.

WOOD PAVING BLOCKS.

Consequent upon several articles appearing in the Weekly Report of the Department of Trade and Commerce relating to the opening in Great Britain for Canadian wood paving blocks, the commissioner interviewed the Secretary of the Highways and Paving Department of the Manchester Corporation, and the following information was obtained, viz.:—

"The area of wood block paving laid in public streets in Manchester is 37,634 square yards.

"Nearly the whole of the above paving is laid with Australian hardwood, Karri and Jarrah; the remainder is creosoted English beech.

"Wood paving is not considered suitable to the traffic of Manchester, and team owners strongly object to it. It is a costly pavement to lay and maintain and in consequence of these objections it has been laid only in front of public institutions (hospitals, schools, &c.) and in places where applicants have paid the cost of laying it.

"There is no prospect of an increasing trade in Manchester. The sizes of blocks used are 3 inches wide, 8 inches or 9 inches long, and 4 inches or 5 inches deep for Australian hardwood, and 6 inches deep for beech. The Australian blocks are not specially treated, but the beech is creosoted.

"A new length of wood pavement, requiring about 50,000 blocks, is about to be laid opposite a school, and creosoted deal blocks 3 inches wide, 8 inches long and 5 inches deep are specified for the work. The blocks will probably be Baltic timber, and the creosoting will be carried out at the place where the blocks are sawn, i.e., probably at the port of entry.

"Prices for delivered into Manchester vary from £6 to £8 10s. per thousand blocks, i.e., deal blocks."