Some extensions are to be made on the Hamilton waterworks.

The waterworks at Southampton, Ont., are to be extended.

A bridge over the Magpie River, Michipicoten district, is asked for.

A floating bridge has been built at Gannon's Narrows, County of Peterboro.

Work has been begun on a system of sewers for Glace Bay, N.S. Bithulitic pavements will follow.

The Ontario Power Co. has constructed a road for driving from the ferry landing to the Horse-shoe Falls, Niagara, under the cliff.

A topographical survey of Lake Temagaming is being urged upon the Government, in view of the fact that it is likely to become a great resort.

Windsor, Ont., will purchase a new waterworks pump from the Snow Pump Co., of Buffalo, for $17,619, guaranteed to supply 5,000,000 gallons in twenty-four hours.

Springhill, N.S., has decided to have waterworks, at a cost of from $80,000 to $100,000. The source of supply will be the Meccan river, seven or eight miles distant.

The Dominion Iron & Steel Company is making surveys for a new dam at Sydney River just below the site of the present one, which is thought to be unsafe.

The C.P.R. has determined to proceed with irrigation works in the Northwest, by which some two million acres will be reclaimed. W. Whyte, assistant to the president, has the scheme in charge.

The report of Willis Chipman, C.E., places the cost of waterworks for the town of Carleton Place at $89,000, and of sewers, $79,000. Of the latter, about one-half would be repaid by frontage tax. The ratepayers are considering the report.

Lethbridge, N.W.T., and Gananoque, Ont., are calling for tenders for water works and sewers. Regina, N.W.T., has resolved to have water works, sewers ,and electric lights to be operated by the city, and Moose Jaw is making a similar move.

There has been a big fight at Ottawa over a bill relating to the Toronto & Hamilton Railway, which would have deprived Toronto and other municipalities of the control of their own streets. The municipalities had the obnoxious clauses struck out.

S. B. Kramer, formerly chief despatcher, has been appointed master of transportation of the Eastern Division of the Grand Trunk Railway. He will have charge of the distribution of passenger and freight equipment subject to the instructions of the car service agent, and have supervision over train movements. A. J. Nixon succeeds Mr. Kramer as acting chief train despatcher.

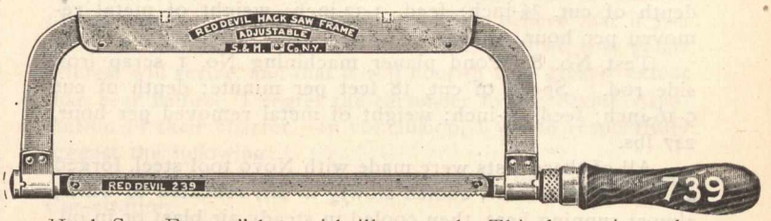
A number of lawsuits have been brought at different times against the Gananoque Water Power Co. by farmers along the Rideau and Gananoque rivers, who alleged that their lands were flooded by the company's dam at Marble Rock. These suits have never resulted satisfactorily and now some of the injured have taken the law into their own hands, and blown up the dam with dynamite. If discovered they will be prosecuted.

The annual meeting of the Western Ontario Good Roads Association will be held in the Board Room of the Toronto Exhibition Association, on the 8th and 9th September. Among the topics for discussion are: The Making of Good Roads; The Abolition and Commutation of Statute Labor, and The recent act for the Improvement of Highways. Col. W. H. Moore, President United States Good Roads Association, and other public men have been invited to deliver short addresses.

Robert Coleman, fireman on the steamer America, met his death in a peculiar manner. He was tightening a bolt about the engine, using a large wrench, when the wrench slipped, throwing him backwards. His head struck a corner of the base of an electric dynamo with such force that the skull was fractured, and death followed almost instantly.

HACK SAW FRAME.

Among the many new models and improvements on the old tools that have been made by the Smith & Hemenway Company, of 296 Broadway, New York City, during the past six months, none has been more widely and generously commended, and universally used than their "Little Red Devil



Hack Saw Frame," herewith illustrated. This frame is made of the finest tool steel, nickle plated. The back is extra heavy, and so constructed as to make it absolutely rigid. The company will send upon request, their catalogue, the Green Book of Hardware Specialities, wherein full description and price of this tool will be found.

NOTES ON HIGH-SPEED TOOL STEELS.*

By Henry H. Suplee, of New York.

The following notes represent officially verified data as to the use of high-speed tool steels in the works of the Union Pacific Railroad at Omaha, Neb., and as such are offered as a brief contribution to the subject. As is now well-known, these steels are similar in constitution to the Mushet air-hardening steel, the principal difference being that a much higher temperature is used in the tempering process. The steels contain both chromium and tungsten in varying proportions, as well as molybdenum. The method of treatment consists in heating the tool up to about 2,000° F., then cooling rapidly down to about 1,700° F. in a lead bath, and then slowly in air or lime. These steels, of which the Taylor-White is the best-known and earliest example, are able to maintain a cutting edge even when operated at speeds producing a red heat; and, in fact, unless such speeds and temperatures are maintained, they do not give satisfactory results. These tools should be used only for roughing purposes, and the great economy resulting from their use appears when it is found that the forgings can be made with less care as to size, the roughing down to finishing dimensions being made more rapidly and economically in the machine processes than in forging.. Small chips can be turned from car-wheel tires at lineal speeds of 5 feet to 8 feet per minute, the weight of metal removed being about 8 lbs. per hour; this is with ordinary tool steel. Turnings, such as the turnings from a locomotive tire, are made with high-speed steel at a speed of 24 feet per minute, removing 100 lbs. to 120 lbs. per hour; while heavy chips are taken at 18 feet per minute, removing 450 lbs. per hour. This latter cut was too heavy for the powering of the lathe, however, and the rate could be maintained for only a short time, but the tool showed no signs of distress.

The following are authenticated records made in the Union Pacific shops at Omaha, Nebraska, U. S., for which the author is indebted to Mr. R. Emerson, secretary of the Union Pacific Railroad Board of Tests, the work being done on a wheel lathe, a planer, and two boring mills, with "Navo" Air Hardening Steel.

Test No. 1. Pond lathe machining soft cast iron piston valve bushing. Speed of cut 74 feet per minute; depth of cut ½ inch; feed 3-32 inch.

Test No. 2. Pond lathe machining No. 1 scrap iron 4-inch piston rod. Speed of cut, 18 feet per minute; depth of cut, ¾-inch; feed, 1-16-inch.

Test No. 3. Pond lathe machining No. 1 scrap iron crank-pin. Speed of cut, 26 feet per minute; depth of cut ½-inch; feed, ⅛-inch.

Test No. 4. Niles vertical boring mill machining steel locomotive driving tire. Speed of cut, 40 feet per minute; depth of roughing cut, ⅛-inch; feed, ⅛-inch.

Test No. 5. Bullard vertical boring mill machining cast iron piston head. Speed of cut, 20 feet per minute; depth of cut, 13-32-inch; feed, ⅛-inch.

*Paper read before the Institution of Mech. Engineers at Leeds, July 28, 1903.