

	R. A.	Decl'n.
Polaris	1° 31' 39.2"	88° 51' 58"
B. Aquarii	21° 27' 16.0"	5° 55' 51"S.
E. Aquarii	21° 33' 25.0"	8° 13' 15"S.

$p=4082.0$ secs.

Formulae:—

$$\Delta = (a_1 - a) - (T_1 - T)$$

$$A = \frac{p \sin \Delta}{\cos a} (1 + p \sin 1'' \tan S \cos \Delta)$$

Computation, B. Aquarii

$a_1 = 1\text{h. } 31\text{m. } 39.2\text{s.}$	$T_1 = 21\text{h. } 27\text{m. } 05\text{s.}$
$a = 21\text{h. } 27\text{m. } 16.0\text{s.}$	$T = 21\text{h. } 30\text{m. } 40\text{s.}$
$(a_1 - a) = 4\text{h. } 04\text{m. } 23.2\text{s.}$	$(T_1 - T) = 23\text{h. } 56\text{m. } 25\text{s.}$
$(a_1 - a) = 4\text{h. } 04\text{m. } 23.2\text{s.}$	
$(T_1 - T) = 23\text{h. } 56\text{m. } 25.0\text{s.}$	
$\Delta = 4\text{h. } 07\text{m. } 58.2\text{s.}$	
$= 61^\circ 59' 30''$	

Computation, E. Aquarii

$a_1 = 1\text{h. } 31\text{m. } 39.2\text{s.}$	$T_1 = 21\text{h. } 33\text{m. } 40\text{s.}$
$a = 21\text{h. } 33\text{m. } 25.0\text{s.}$	$T = 21\text{h. } 36\text{m. } 50\text{s.}$
$(a_1 - a) = 3\text{h. } 58\text{m. } 14.2\text{s.}$	$(T_1 - T) = 23\text{h. } 56\text{m. } 50\text{s.}$
$(a_1 - a) = 3\text{h. } 58\text{m. } 14.2\text{s.}$	
$(T_1 - T) = 23\text{h. } 56\text{m. } 50.0\text{s.}$	
$\Delta = 4\text{h. } 01\text{m. } 24.2\text{s.}$	
$= 60^\circ 21' 00''$	

	B. Aqu.	E. Aqu.
$\log \sin \Delta$	9.94590	9.93905
	3.61087	3.61087
$\log p$	3.55677	3.54992
$\log \cos a$	9.85275	9.85275
$\log 1\text{st term}$	3.70402	3.69717
$\log p$	3.61087	3.61087
$\log \sin 1''$	6.68557	6.68557
$\log \tan S$	9.01650	9.15980
$\log \cos \Delta$	9.67170	9.69434
$\log 2\text{nd term}$	0.68866	0.84775
First term	5059.0"	4979.0"
Second term	-4.8"	-7.0"
A	5054.2"	4972.0"
	1° 24' 14"	1° 22' 52"
Convergence	-1' 06"	-1' 06"
Bearing of Polaris	01° 23' 08"	01° 21' 46"
H.C.R. on Polaris	00° 00' 00"	359° 58' 00"
Corr. to H.C.R.	01° 23' 08"	1° 23' 46"
H.C.R. on Ref. Pt.	26° 15' 00"	26° 15' 00"
Bearing of Ref. Line	27° 38' 08"	27° 38' 46"

To Find Watch Correction

$\log A$	3.70364
$\log \sin (a - S)$	9.88741
	3.59105
$\log \cos S$	9.99767
$\log T$	3.59338
$\therefore T$	3921.0"
	1° 05' 21"
	0h. 04m. 21s.

$a = 21\text{h. } 27\text{m. } 16\text{s. (R.A.)}$
 $\theta = 21\text{h. } 31\text{m. } 37\text{s. (Sideral time)}$
 Watch = 21h. 30m. 40s.
 Watch correction = +1min.

Contract for 24-in. intake and for protection wall at New Toronto, has been awarded to R. C. Huffman & Co., at \$49,750. James, Loudon & Hertzberg, Ltd., Toronto, consulting engineers.

\$5,000,000 FOR ONTARIO'S ROADS

IN the Ontario Legislature this week, the sum of \$5,000,000 was set aside for highways improvement. An amendment submitted by J. C. Elliott, of West Middlesex, insisting that the minister furnish the House with a map of the proposed route, plans, specifications and estimates of cost of the various kinds of road construction, was defeated, and the original motion carried.

Hon. Mr. Macdarmid stated that construction of the Provincial highway will be extended over a period of several years. He intimated that 200 miles of the road would be built of concrete; 175 of bituminous macadam, and the remainder of gravel, which he believed would prove suitable for many years to come.

The vote of \$5,000,000 covers not only expenditure on the Provincial highway, but also provincial government grants to the various counties of Ontario, all but one of which are now working under the county road scheme. Their average expenditure is \$100,000 a year, or a total of \$8,700,000 for the 37 counties. The government contributes 40 per cent. of this amount, or approximately \$1,800,000. J. C. Elliott inquired whether this included expenditures on the Provincial highway.

"Not west of London," replied the minister.

Mr. Elliott reiterated the opinion that the House should know the plans and specifications for the road.

CORRECTION

IN reproducing the nomogram on page 364 of last week's issue of *The Canadian Engineer*, the relative position of the two vertical scales was inadvertently altered, thus destroying the accuracy of the nomogram, as the angles formed by the straight-edge would not be correct. Those who are interested in obtaining a copy of the nomogram that is correctly spaced and therefore of practical use, should apply to W. H. Herbert, of the Topographical Survey Branch, Ottawa, who prepared same for his department.

The 505-ft. revetment wall built at the Port Burwell, Ont., harbor, by the F. E. Tiff, contractor, was completed April 12th. This was a Dominion government contract.

James, Loudon and Hertzberg, Ltd., Toronto, have been appointed consulting engineers to prepare plans and specifications for pavements for the town of Mimico, Ont. Estimated expenditure, about \$75,000.

Contract for the reinforcing steel for the T. Eaton Co. building at Moncton, N.B., has been awarded to the Burlington Steel Co., Ltd., Hamilton, by the Geo. A. Fuller Co., who are the general contractors on the work.

In the estimates brought down in the Ontario Legislature by Hon. T. W. McGarry, provincial treasurer, is the sum of \$90,000 voted for colonization roads, to be spent in the fiscal year ending October 31st. This is the same sum as was voted for this purpose last year.

The contract for the Hunter St. bridge, Peterboro, Ont., has not yet been let. Notice is being sent to all bidders, advising them of certain changes in the plans and enquiring what difference they will make in the prices bid. No award will be made until the contractors have had time to reply.

The annual meeting of the Toronto Section of the American Institute of Electrical Engineers will be held at 8 p.m., Friday, April 25th, in the lecture-room of the Engineers' Club, Toronto. The nominations for the season 1919-20 are as follows: Chairman, Ashton B. Cooper, Canadian General Electric Co.; secretary, Daniel M. Fraser, Canadian General Electric Co.; executive, L. B. Chubbuck, Canadian Westinghouse Co.; C. C. Clark, Swedish General Electric Co.; H. C. Don Carlos, Hydro-Electric Power Commission; F. R. Ewart, Ewart and Jacob; C. Sisson, Canadian General Electric Co.; and W. Volkman, Toronto Power Co.