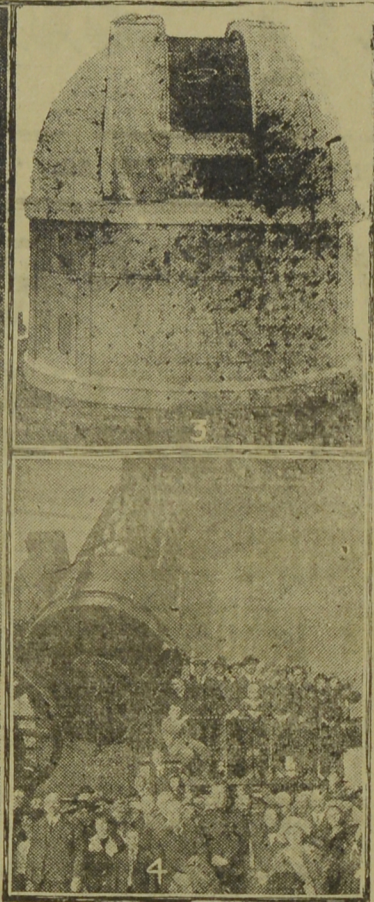
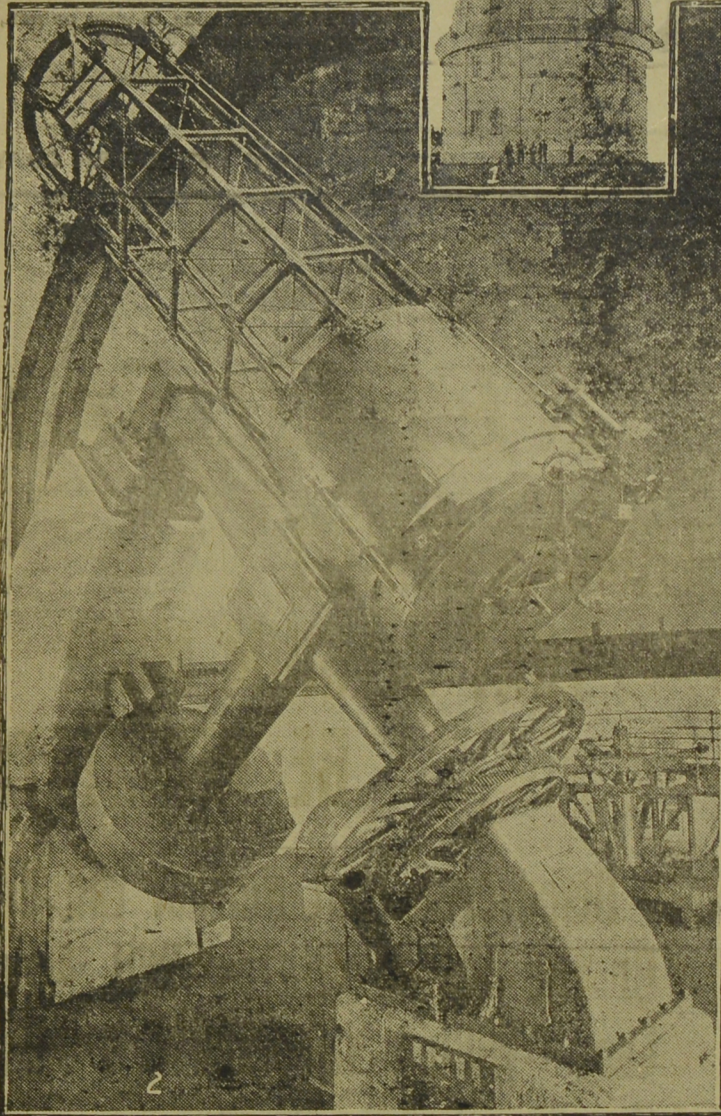


STUDYING

* WITH *

THE STARS

* MIRRORS *



- (1) Dominion Observatory at Victoria, B.C.
- (2) Reflecting Telescope.
- (3) Observatory open.
- (4) Official opening of Observatory.

sheathing is attached to both sets, forming thus a double wall, with an intermediate air space of at least six inches. This structure must be made extremely stout in order to bear the enormous weight of the dome. One of the pictures shows the building complete. This is furnished with a system of shutters which with the double wall permit the interior of the building to maintain an even and moderate temperature. Electric motors are used in moving the telescope and dome. These are controlled by push buttons. An important part of the gearing is the clockwork, which carries the telescope with the rotation of the heavens, so that a star can be kept in the field of view as long as it is desired. This must be made so that the telescope moves with absolute steadiness.

The optical parts of the instrument are being made by Brashear at Allegheny. The large mirror is twelve inches thick at the edges and will weigh over four thousand pounds. The reflecting telescope is used for direct photography, both for recording very faint objects and for getting fine details of brighter objects, such as nebulae. We can also get photographic images of very faint stars, the twentieth magnitude having already been captured. It is also extremely valuable for spectroscopic work. A long exposure is required even with the great forty-inch Yerkes refractor to obtain the spectrum of a star of the fourth magnitude.

It is with the reflecting telescope that many of the most brilliant discoveries about stars are made. Its construction, however, is not so generally understood as that of the refracting telescope, the form of instrument which is so often seen in the parks or on the streets of our cities and through which the passer-by can get a peep at the moon for the trifling sum of five or ten cents.

The lens at the upper end of a refracting telescope is called the object glass. It collects the rays of light and brings them together at a focus to form an image, which is viewed with a magnifying eyepiece. The largest refracting telescope is the well-known Yerkes instrument. It has an object glass forty inches in diameter.

But the biggest reflecting telescope in the world belongs to Canada. This has been erected at Victoria, B.C., which is only a short journey from Vancouver by C. P. R. steamers. In a reflecting telescope, the light is collected by reflection from the surface of a concave mirror. If this surface is ground to a parabolic shape, the rays will all come together at a single point to form an image, just as with the refracting telescope; but this point will be situated on the same side of the mirror as the object, and hence the observer

who tries to look at a star will find his head in his own line of vision. In order to overcome this difficulty, a second reflection is made to take place, so as to deflect the beam of light and form the image at one side of the tube, where it may easily be examined with an eyepiece. This second reflection is accomplished by means of a plane mirror or "flat" inserted in the upper end of the tube and set at an angle of 45°. This flat will necessarily cut off some of the light falling upon the principal mirror, but since it is not large and since its supports are made as slender as possible, there is no serious loss.

The building of the seventy-two inch Canadian instrument may be taken as an illustration of some of the mechanical difficulties to be surmounted. One shows the mounting. The ends of the polar axis are supported on steel castings which are bolted to the heads of concrete piers. The permanent pier erected at Victoria is shown also. The polar axis must be set parallel to the axis of rotation of the earth. In the latitude of Victoria it makes an angle of more than 45° with the horizon. To the uprights of the framework of the walls are attached horizontal ribs which are for the purpose of supporting the sheet metal walls. The

GERMANS LAUNCH PROPAGANDA IN CHINA

Pekin, Jan. 20.—The Germans have acquired two scurrilous newspapers in North China which have a little circulation among the Chinese.

Their overseas service supplies columns daily of fanciful war news. Much of this is unintelligible to the Chinese, but the service frequently contains lies damaging to the Allies.

The German propaganda had some success in ignorant up country regions but the masses of China are indifferent to the issues and certainly are not pro-German.

In business circles it is understood that German trade is strangling, while the trade of the Allies prospers. In military circles, however, German prestige continues high. The military leaders, who virtually control the government, appear unable to divest themselves of the apprehension that Germany may yet win the war.

Steps have been taken to put the Allied situation more clearly before the Chinese. The Germans certainly are preparing to exploit China after the war.

The children of the man who made a specialty of sowing wild oats before his marriage will be sure to harvest an abundant crop of advice.

SOLDIERS INTERESTED IN INSURANCE CASE

Toronto, Jan. 20.—The associated kin of the Canadian expeditionary forces has decided to launch an appeal against the decision of Mr. Justice Kelly in dismissing the action brought by Mrs. Lancaster to collect \$1,000 insurance held by her late husband, who was killed in action.

In the application for insurance he named Toronto as his place of residence, whereas he actually lived a few yards outside the boundary of the city. The association feel that it is a purely technical point and the widow should

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Poisonous matter clogged in the intestine, instead of being cast out of the system is re-absorbed into the blood. When this poison reaches the delicate brain tissue, it causes congestion and that dull, throbbing, sickening headache.

Cascarets immediately cleanse the stomach, remove the sour, undigested food and foul gases, take the excess bile from the liver and carry out all the constipated waste matter and poisons in the bowels.

A Cascaret tonight will surely straighten you out by morning. They work while you sleep—a ten cent box from your druggist means your head clear, stomach sweet and your liver and bowels regular for months.

SAYS COL. BRUCE SHOULD TALK TO THE PEOPLE

A Strong Combination Set Against His Work in the Oil Country.

(Winnipeg Free Press.)

Col. Bruce had better come home and talk to the people of Canada about the conditions of the Canadian Medical Services in England. It is quite evident that Dr. Bruce, in his attempt to bring about needed reforms, found himself confronted by a combination much too powerful for him when he lost the backing of the minister of his department by the dismissal of Sir Sam Hughes. This combination against Dr. Bruce included the influence of the existing regime, which wanted nothing changed, and the social power of the colony of Canadian society women, who have had their fingers in the military pie ever since the First Canadian Contingent reached British shores.

The official inclination of Downing Street and the War Office to frown down any purely Canadian development was also a factor of moment. A child could see that the powers that want things to remain as they are loaded the dice against Dr. Bruce in the creation of the Baplle commission. Dr. Bruce should treat with scorn the attempt to close his mouth by offering him a position in the medical service of the Dominion. He should appeal from the military, medical and social clique in England to the people and the Parliament of Canada, from whom he will get a sympathetic hearing.

There will yet be very important consequences to Dr. Bruce's well-meant attempt to bring about reform in the Canadian medical services in England and the fate which met his efforts.

It is the noble, unselfish, high-souled woman who inspires men with chivalry—but it's the other kind who give them a chance to practice it.

To a bachelor a wedding ring on a pretty woman's finger is the white flag which assures him that he may proceed. In all that crowd exchanging Christmas gifts, you never once saw father. It wasn't that he didn't care, but rather that he didn't dare!

not be deprived of the money.

Article 8 of the aims and objects of the association provides that it assist all rightful claimants in bringing about the prompt payment of legitimate pension claims, insurance and patriotic allowances.



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A commission of one-quarter of one per cent will be allowed to recognized bond and stock brokers on allotments made in respect of applications for this stock which bear their stamp.

For application forms apply to the Deputy Minister of Finance, Ottawa.

DEPARTMENT OF FINANCE, OTTAWA
OCTOBER 7th, 1916.

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