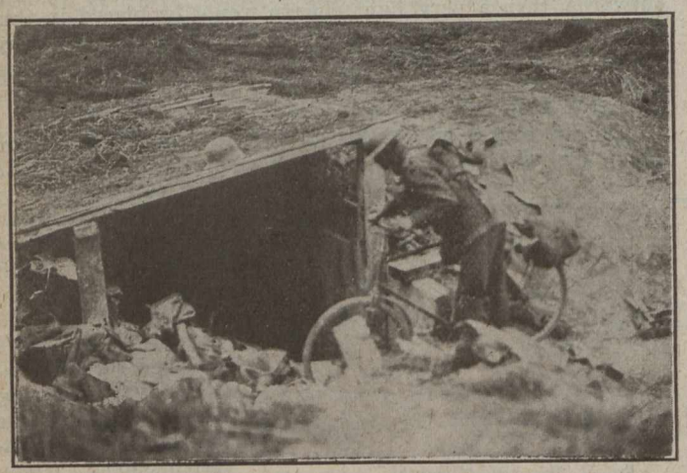
push-button connected to the office. Listeners lay in each pocket continuously, working in shifts of six hours on and twelve off. Each man had a geophone, which was a round wooden box, 3 ins. in diameter and 1 in. thick, containing a mass of mercury between two mica diaphragms, with ear connections like a doctor's stethoscope.

These geophones were very sensitive, and a good listener could pick up sounds of careless working through 16 or 20 ft. of sand, depending on its density. Practically the limit of hearing with the naked ear was 3 or 4 ft. Of course, in clay these distances were often much greater.

The leads from the torpedoes were carried out in gas-pipe tubes for protection, and if the geophone was placed in touch with the metal, the sounds were carried much better, so that when a listener heard a sound, he tried each pipe in turn, thus getting some idea of the direction of the sound. He then rang the bell, and either the officer on shift or the listening patrol would join him and confirm the sounds. Then the pockets on each side would be carefully tested and the source of the sound estimated. It was then necessary to determine whether the sound came from below or from above ground. This generally meant a few hours at night spent crawling around among the wire, etc., of No Man's Land to make sure the sounds did not come from wiring parties, or trench digging, or any other of the numerous noises of the night between the lines.

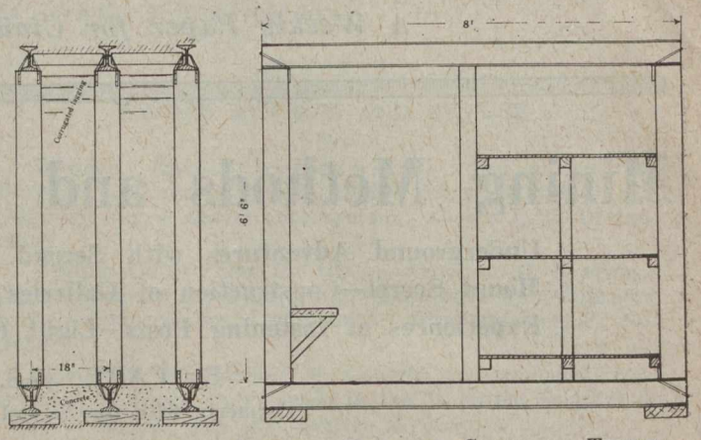


ENTRANCE TO GERMAN GALLERY NEAR VIS-EN-ARTOIS

When we were quite sure that the enemy was underground, we noted the sounds in the log and waited. When he got close enough that we could hear him with the naked ear, we quietly stole away, connected up the main leads, tamped the gallery a little to secure it, and pressed the exploder. If we had been right, investigation would reveal our gallery all O.K., therefore the charge must have gone into the enemy's gallery, and the O.C., after investigation, patted us on the back and told us what fine fellows we were. On the other hand, if we found our own gallery smashed, it showed that we had had our "wind up" and blown a mouse or some other harmless noise, and the O.C. would say, "Hum! I guess Redan needs a new man. You ought to be retired in disgrace to a job where Fritzie couldn't reach you underground and given opportunity to think of your past failures."

My greatest scare came from a mouse which had got down a bore hole; the rattle of its claws on the pipe exactly resembled the muffled scrape of a shovel. I had been called down by the listener and had lain in the dark for about two hours waiting for time to blow, the arrangement being that I would connect the leads, press the bell and the office would give me one minute to get back to safety before they would touch her off. However, when I had the leads all bared ready to connect (and I must admit that my hair was standing on end and I was sweating profusely, as I was quite sure Heinie was only three feet away), much to my relief I saw a small pink nose and two sharp ears appear at the mouth of the hole.

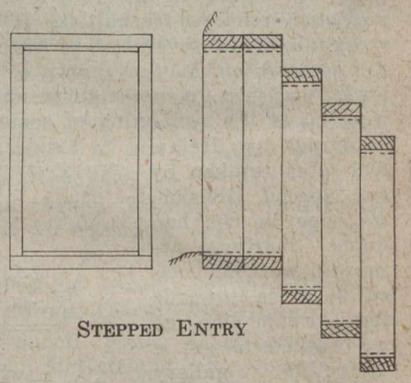
The desire to let the enemy get as close as possible, matched against the necessity of not letting him get in, to-



TYPE OF LIVING GALLERY BUILT BY CANADIAN TROOPS

gether with the intense quiet and darkness, made the work extremely nerve-racking, and many men could not stand it for over three months. One night one of our men was too cautious about blowing, and Fritzie actually stole one of our torpedoes. Why he did not blow us we never knew, but he never got the chance again, as our flanking torpedoes were immediately blown, and as our gallery was untouched, we must have got him.

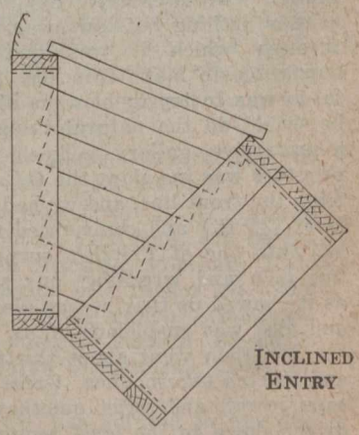
After a blow, very often the galleries would be filled with carbon monoxide, which is deadly, and so great precaution was always taken, a "proto man" being the first to enter the galleries after any trouble. The "proto man" was a man trained in the use of the proto, or mine-rescue apparatus. He usually went armed with oxygen tank on his back and a canary in a cage. If the canary fell off the perch, he knew there was carbon monoxide present, so he would strap on his mouthpiece, if it were not already on, and finish his investigation with artificial air.



STEPPED ENTRY

Methods of Mining

The timber used in France for mining purposes was standard 3 by 9 in. spruce and pine, with some local elm when the supply ran short. Standard sets were made up in the yards, the inside dimensions being 2 ft. 3 ins. by 4 ft., 2 ft. 6 ins. by 5 ft., 2 ft. 6 ins. by 5 ft. 6 ins., 3 ft. by 6 ft., and 6 ft. 6 ins. by 6 ft. Most mine galleries were 2 ft. 3 ins. by 4 ft., and connecting galleries, 2 ft. 6 ins. by 5 ft. or 5 ft. 6 ins. Main galleries for passage of troops were generally 3 ft. by 6 ft., and living dugouts, 6 ft. 6 ins. by 6 ft.



INCLINED ENTRY

In shallow work, that is, with less than 30 ft. of head cover, sinking and rising was carried out by the use of stairways and not shafts, 2 ft. 6 ins. by 5 ft. 6 ins. or 3 ft. by