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From the Canadian Mining Review.

[Being a series of papers contributed to the Transactions of the Mining Society of Nova Scotia.]

[4] **GOWRIE COLLIERY, CAPE BRETON.**

By Mr. Charles Archibald, Cow Bay, C. B.

In responding to the request of the Council to read a brief paper on the system of working coal at the Gowrie mines, I do so feeling that it will not contain anything new or interesting to my mining friends. The intention I understand is to get opinions at this meeting on the longwall system of working. The pillar and room system has been universally adopted at the coal mines in Cape Breton, until the Gardener mine very recently changed from that system to longwall.

The MacAulay seam worked at the Gowrie mines varies in height from 4 ft. 8 in. to 5 ft. 6 in., but the usual or mean height is 5 ft. It has always been worked on the "pillar and room system." For many years the rooms were driven six yards wide and the pillars from five to seven according to circumstances.

The coal dips at an angle of 8½° clear, the crop flattening as is usual towards the basin, and for the past ten years the dip has averaged about six degrees. The method of working is as follows: Two levels, the upper or main, and the lower or water level, are driven nearly on the end of the coal with a ten yard pillar of coal between, and the rooms are turned up the hill or to the pit from the main level. The coal dips to the northward, and while the levels are about seventy degrees west of north, and correspondingly seventy degrees east of south, the rooms are all driven south. The upper level is driven ten feet wide, the roof being good and safe to allow this width, and spare roads can be laid down without the expense of widening; the lower or water level, is about eight feet in width. Cross-cuts are made usually one chain apart, and slant roads take the place of cross-cuts where required.

No powder is used except on the levels and cross-cuts; the coal is undercut or holed about three feet, or a pick-handle, sheared on one side of the room and brought down by steel wedges. The nature of the coal of course favors the wedging system, as there is a perfect parting at the roof, and a roof coal varying from four inches to eight inches which is separated and stowed in the roof.

For many years the rooms were driven narrow, or the ordinary width of six yards; the roadway was laid up the centre of the place and the roof coal, and when the coal was riddled the slack was stowed on each side of the roadway against the pillars. The expense and inconvenience of clearing the pillars to remove them was one of the causes that induced the change of working, and about twenty years ago the plan of driving the rooms ten yards wide and leaving the pillars the old width was adopted and has continued successfully ever since. By this plan the roadways instead of running up the middle of the room, were laid about three feet from the side of the pillars; the centre of the room was well timbered, and the roof coal and any refuse was thrown or stored in the centre of the place, thus leaving the face of the pillars clean. The pillars were removed to great advantage and with comparatively little expense; the rooms were driven to a counter level, and after leaving a pillar sufficiently strong to protect the roadway or counter level, the pillars were brought back; the rails being taken up on the retreat and the top allowed to come in. Besides the advantage gained by cheapening and facilitating the withdrawal of the pillars, the wide room, or, as it might be termed, the semi longwall system, enabled the getting of more coal by the same number of men than if they worked in narrow rooms. Another felt advantage was that a larger percentage of coal was drawn for the same amount of narrow work before the removal of pillars. By narrow work I mean levels and cross-cuts, as for example roughly, the rooms being ten yards wide and the pillars six, we got ten-sixths or one and two-thirds as against one, or two-thirds more. The removing of such a large percentage by rooms may not appear to some a pecuniary advantage, as miners are generally paid a less rate per ton for removing pillars, but my experience in working the MacAulay seam has proved that the wide room system beside other advantages has been a pecuniary success.

I am well aware that the working of wide rooms successfully depends upon the height of the seam, and more particularly on the nature of the roof, and in a mine where close timbering was required, it would not pay, and in many cases would be impracticable.

The roads laid up each side of the room are kept about three feet from the pillar; the space allowed for the roadway is about six feet from the side of the pillar; a row of props, five inches or more in the small end, are set under cap pieces and extend from roadway to roadway. Usually only four or five are used in each row, placed about four to five feet apart. These rows or props are put about every five feet. If necessary, of course more timber is used.

In breaking off rooms, they are started narrow from the level pillar, six yards, and gradually widened until it reaches ten yards; the widening is done on one side, thus leaving one straight side from the level to face. When the rooms are started two roads, one alongside of each pillar, are used, but when the room is advanced some distance, to economise in the use of rails, a sweep is put in and at that point there is only a single road to the level.

The coal is filled into boxes, containing from twenty-five hundred to thirty-five hundred pounds each, and the difference depends upon how the miner fills and heaps his tubs.