Company, Dakota, has paid, up to the 25th March, 1885, no less than seventy-eight successive monthly dividends, aggregating $2,637,500; the Ontario Mining Co., Utah, to the same date has paid $6,275,000 in one hundred and five monthly dividends; the Small Hopes Con. Mining Co., Colorado, since February, 1884, has paid $1,037,500 in fifteen dividends; the Idaho Gold Mining Co., California, has paid one hundred and eighty-one successive monthly dividends, aggregating $3,667,300; the Father De Smet Con. Gold Mining Co., Dakota, has paid $980,000 in forty-three successive monthly dividends; the Jocuistita Mining Company Mexico, has paid $1,200,000 in fifteen quarterly dividends, and the Hecla Consolidated Mining Co., Montana, has paid six dollars per share yearly for several years. The Horn Silver Mining Co., Utah, paid in quarterly dividends up to 15th November, 1884, $1,000,000.

Australian Gold Notes.

The yield of gold from mines in the Ballarat district, 2,079 oz., 17 dwts.; from the Creswick district, 2,507 oz; from the Sandhurst district, 6,919 oz., 1 dwt.; from other districts 4,961 oz., 10 dwts. Total yield for the week from the returns sent in (Feb. 7), 16,469 oz., 10 dwts., value about $150,000.

Dividends for the week (February 14) from ten Victoria gold mines were £12,244, or $61,000. The Victorian yield of gold for 1884, calculated on the usual basis, shows an increase over that of 1883 of 43,957 oz. In 1883 there was a falling off after three years of high production; but gold mining is again in the ascendancy, and the outlook for this year is very hopeful.

The following are the returns from the undermentioned mines during the four weeks ending Saturday, February 7: New North Clunes Company, 309 oz., 11 dwts., 12 grs.; New Yankee Company, 82 oz., 1 dwt.; South Clunes Company, 405 oz., 4 dwts., 12 grs.; Port Phillip Company, 455 oz., 19 dwts., 12 grs.; Bate and Dowas Company, 401 oz., 4 dwts.; New Lothair Company, 40 oz., 8 dwts.; other sources, 150 oz.; making in all 1,845 oz., 8 dwts., 12 grs., value $36,500.

Asbestos, its Manufacture and Uses.

Asbestos mining having become such a very important industry in Canada, and as the product of the mines in the Eastern Townships is now admitted by manufacturers, the world over, to be unexcelled in quality, we publish, for the benefit of those of our readers who are not informed as to the variety of uses to which this valuable mineral is put, the following very interesting article which has appeared in the *Engineering and Mining Journal*, N.Y., of a recent date:—

"Asbestos is a fibrous variety of actinolite or tremolite, and consists of silica, alumina, magnesia, oxide of iron, and water. It has been known for many hundreds of years, and indeed it is reported that asbestos cloth was used on the funeral pyres of the ancients. Whether that be true or not, it is certain that until recent years asbestos has been regarded merely as a kind of scientific curiosity, valuable as an illustration of the wonderful diversity of nature, but of little practical use in the world. A few years ago, almost simultaneously, a movement was set on foot in England, Scotland, and Italy, and asbestos began to be mined and to be manufactured, at least in an experimental way. The time was opportune for the new venture. For years, steam pressures had been gradually rising, and whereas 30 pounds to the square inch at sea, and 50 pounds on land, had hitherto been the average, these pressures were now beginning to be doubled, and the old forms of packing for joints and glands showed great distress. Gasket rings and hemp gland packings had both been superseded by more durable and compact appliances; but these were far from perfect, and when exposed to the higher temperature that was evidently coming it was certain that they would give trouble.

In the year 1879, three firms that had entered into the mining and manufacture of asbestos formed themselves into one company, and a rigorous search was made through the region of the Italian Alps, where asbestos was known to exist, to discover all the sources. The result of several surveys was the discovery of about 180 valuable mining properties, covering 80 square miles of land, in districts about 80 miles from Milan. All these mines were secured by the company.

The Italian asbestos lies in beds and pockets, which are mostly reached by open quarrying, dynamite being largely employed in this operation. The lumps, as they are taken from the mine, consist of bundles of hard fibers, lying parallel with one another, and strongly bound together. They vary in color from light gray to brown, and the general appearance of a fine sample of asbestos is suggestive of the interior of the riven trunk of a tree. By the exercise of a little care threads may be separated many feet or even yards in length, the continuity being perfect from end to end, the general appearance and strength being very similar to those of flax. It is this quality of length and strength of fiber, and its chemical purity, that distinguish Italian asbestos from all other. The mineral is pretty widely diffused; it is found in Canada, Corsica, the United Kingdom, and in many other places, but in most of these countries it presents a very different appearance from that we have already described. Instead of the bundles of fibers being several feet in length, they are broken up into short pieces of only from 1 inch to 3 inches, and are bound together with such rigidity that the woody appearance of the fracture is nearly lost. Another peculiar characteristic of the Italian asbestos is the greasy feeling that it possesses, resembling that of French chalk or soapstone. When the material is manufactured into gland packings, this quality becomes valuable, as it prevents the necessity of introducing any foreign substances, and permits a perfectly pure packing of asbestos, through which the rod will slide with light friction, and with less oil than other kinds.

The manufacture of asbestos is carried on in several places in England. The chief seat of the industry, is, however, at Harefield, near Rickmansworth. All the asbestos goods used by engineers may be classed, as regards their process of manufacture, under two heads—paper and yarn. The paper may be worked up in various ways, and the yarn may be twisted, plaited or woven, but the crude material is made to assume one of these two forms before it is worked into the finished article.

There are several other branches of manufacture, such as boiler covering, putty, cement, patent fire-proof paint, etc.

The crude asbestos is brought from Italy in bags containing from 1 cwt. to 2 cwt. each, in pieces of all sizes, from that of a man's hand to such as a man can scarcely lift. These have first to be opened out to free the fibers from one another and from the non-fibrous material by which they are bound together. For this purpose, two rollers covered with teeth of pyramidal form are used. These revolve, as a rule, at equal peripheral speeds, and at the same time have a sideways motion in relation to each other, so that the asbestos, which is fed in with the fibers lying parallel to the line of motion, is both crushed and separated at the same time. By the direct pressure, the binding agents are separated, and then the loosened fibers are combed apart by the reciprocating motion, which, however, is not sufficiently great to interfere with their parallelism. The lower roller is driven directly from the prime mover, while the upper is operated by a train of gearing that allows the distance between the two to be adjusted. Each roller shaft is connected by a collar and a connecting rod to a reciprocating beam, which receives its oscillation from an eccentric driven by a pulley and belt. Thus, when the machine is at work, the rollers are both rotated and drawn backward and forward at the same time. The toothed wheels are, of course, secured by feather keys, to render this possible.

Three machines of this kind, but of gradually reduced sizes, are employed to open the asbestos, and then the portion with the longer fiber is taken to the boiling-tanks, to be softened by heat and moisture. Each tank is provided with a rotating beater, which maintains a thorough circulation, taking up the fiber, opening and drawing it out, and then sending it forward to be soaked for a time until it comes around again to the beater. The short fiber is taken to edge-runners and ground, and prepared for the beating-engines, where the binding material is added and thoroughly incorporated: the whole is drawn off into a receiving-tank in the mill-board machine-room. From the tank, it is conveyed to the mill-board machine, to which agitators are attached to keep the fiber from settling. The water is drawn off through a fine wire gauze on a revolving cylinder, leaving a thin coating of the asbestos pulp in the cylinder. This is then taken off by an endless band and transferred to a second solid rotating cylinder, where it steadily accumulates until the desired thickness has been reached. It is finally cut across and removed in the form of a square sheet of millboard or paper.

The sheets, as they come from the machine, contain a large percentage of water, which is removed partly by pressure, and partly by drying. They are first laid between sheets of zinc in a powerful hydraulic press, and much of the water is forcibly expressed, and then they are hung up by spring clips in a steam-heated drying-room, to complete the desication. When the process is finished, the sheets are again pressed to render them flat and to improve the surface, the edges are trimmed and their manufacture is then complete. The sheets ordinarily measure 40 inches by 40 inches, while their thickness varies by thirty-seconds of an inch, from $\frac{1}{32}$ inch to $\frac{1}{4}$ inch. The millboard is cut into shapes suitable for the purposes for which it is intended; pipe-joints are made with rings, valve-chest joints with rectangular shaped washers, and other joints with appropriate forms. The value of the material lies in its indestructibility; it is a pure mineral substance, and suffers no change from contact with heat, steam, or grease, and exercises no chemical influence on the metal with which it lies in contact, so that when the joint is broken the surfaces are found to be uncorroded and to have suffered no change. A finer description of asbestos paper is made for electrical work, as it forms a very efficient non-conductor.

(To be Continued in our next issue.)