THE O. A. C. REVIEW.

PUBLISHED MONTHLY DURING THE COLLEGE YEAR BY THE LITERARY SOCIETY OF THE ONTARIO AGRICULTURAL COLLEGE, GUELPH.

EDITORS:

J. C. MACDONALD, Managing.
P. W. HODGETTS, Assistant Managing.
L. H. CASS, J. R. OASTLER, } Agricultural.
W. L. SUMMERBY, J. A. CUNNINGHAM, } Local,
H. R. ROSS, Personal. G. S. HENRY, B. A., Exchange.
F. A. PARKER, Athletic.

BUSINESS MANAGERS:

E. L. RICHARDSON, Sec.-Treas C. H. ROGERS, W. P. GAMBLE

SUBSCRIPTION RATES:

Annual Subscription, 50 cents, 75c. if not paid before 1st February
Single copies, 5 cents.
Advertising rates on application.
Ex-Students are requested to contribute to our columns.

MAY, 1897.

is the oldest and most successful in the world. Electric locomotives are also being used. The Baltimore & Ohio R. R. are using one to handle heavy trains. These engines have certain advantages over the steam locomotive. They will start a greater load, are more economical of coal, need fewer repairs, and can be used a longer time. The Brett rapid transit system promises us a speed of 150 miles per hour, and is asking the United States Senate for privileges, allowing the establishment of a line between Washington and New York. Thus we can confidently believe that the use of electric locomotives will grow with time, as the limit of speed has been reached by the steam locomotive. Nor must we forget the advent of motor carriages, which bid fair to depose the horse. In Europe already many large stores use delivery vans run by electricity.

The oscillator may be expected to do great things. It is designed to convert steam into electric energy by as direct a process as necessary, and is used primarily in electric light plants, although its application is far more extended. It is calculated to save 18% of friction as existing in the steam engine, and 32% of waste of energy, occurring in the usual dynamo.

The thunderous force of Niagara has been harnessed by the genius of man, and its power transmitted to places many hundreds of miles away. Our darkness has been lightened by practical application of its power, due to inventions by Edison, Brush, Siemens, Swan, and others. Its uses in war are various. The powerful search light reveals, even in the darkest night, the presence of another of its scions, the torpedo. Its varied use in this field, or rather, sea, have elevated the standing of the sailor to a very expert mechanic and electrician. Much might be said of its other uses in plating, electro-typing, gilding, welding of metals, regulators, photographs, phonetic phonographs, its medicinal effects, its use in executions, and many others.

Inventions in hydraulics have furnished us with the elevator, hydraulic crane, hydromotors, turbines. The Pelton wheel by a very simple process is able to use the smallest streams of water, and develop great power.

Inventions in pneumatics have given us the pneumatic loom, power transmitters. By means of atmospheric pressure and a vacuum parcels and letters are despatched. Cash systems in stores are an adaptation. The idea of producing motion by pressure was carried out by Rammell in 1857, and perfected by a system invented by Luhrig. Dunlop's invention of pneumatic tires for bicycles in 1889 revolutionized cycling, and created a new and important industry. In mining enterprises compressed air drives the drills, pumps, engines and hoists. It is used for dusting and sweeping, to prevent the banging of doors, and other minor uses. Compressed air is the only satisfactory agent for agitation of asphalt and nitro glycerine during their manufacture. Also a very important industry, the making of cellulose silk, by forcing wood pulp out of microscopic holes by air pressure. The air brake, air cushions and air or pneumatic guns are also examples of the usefulness of compressed air.

Let us now glance at some of the wonderful machinery used to manufacture articles of every day use, and we find that each branch has its own special devices and machines. Space would not permit even a cursory treatment of many of these; all that can be done is to instance the manufacture and allow it to suggest the mechanism which furnishes the finished articles. Machines make watches, the complicated printing press, sugar-making machinery with its huge crushers, vacuum pans, centrifugal machines, and filters. The manufacture of steel by the Bessemer process, of machine tools, of mining machinery, of ice making machinery, of coal handling machinery, of boot making, furniture construction, and book binding. The machinery used in connection with the manufacture of papers, cottons, woollens and silks, and others too numerous to mention.

Notice must also be given to the rapid rise of aluminum, a metal which, on account of its extreme lightness, its tensile strength, its malleability, and its resistence to corrosion, point to its adaptability in the future.

The progress in war material has advanced as fast or faster than the arts of peace. The old struggle between guns and armor for supremacy still continues. The construction of a modern battleship is a revelation: its powers of destruction with heavy breech loading guns, with complicated machinery for sighting and firing, and hydraulic machinery for loading and moving, is immense. The steel clad deck and heavily armored sides make of the vessels a floating fortress. Quick-firing guns and magazine rifles are protected by scores of patents, every nation having its own favorite. Sub-marine boats are the dread of naval authorities, and in the torpedos there are truly vast possibilities.

Turning from this fearsome sight, let us glance at some of the achievements of engineers. Extraordinary bridges have been built; the gigantic canti-lever over the Firth of Forth, in Scotland, with a longest span of 1,710 feet and a cost of thirteen million dollars; Brooklyn bridge, with a span of 1,595 feet, and crossed by more people daily than any other bridge in the world. In tunnelling mountains have been blasted and rivers undermined. The greatest of these facts are