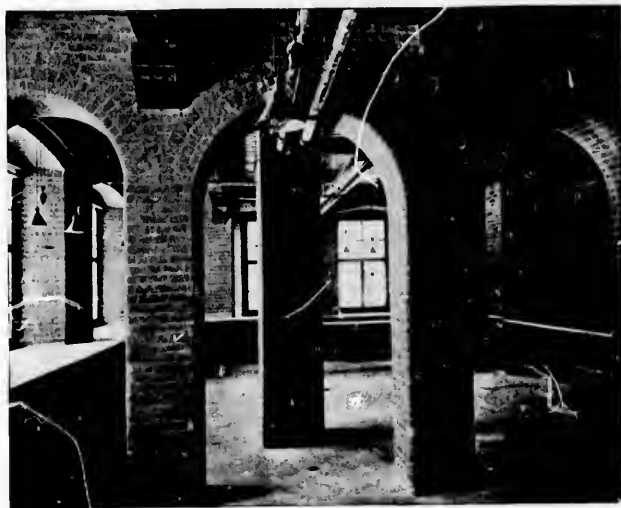


engine lathe, wood lathe, instrument maker's lathe, carpenter's and fitter's bench, etc. In this room is set up an ingenious arrangement of oxygen and hydrogen tanks which can be filled, according to the plan suggested by Mr. G. Prowse, of Montreal, up to a pressure of 10 atmospheres, without any pumping engine, by means of the high water pressure (100 lbs) in the service mains. The gases are led from the cylinders to the Lecture Theatre and Heat and Research Laboratories.

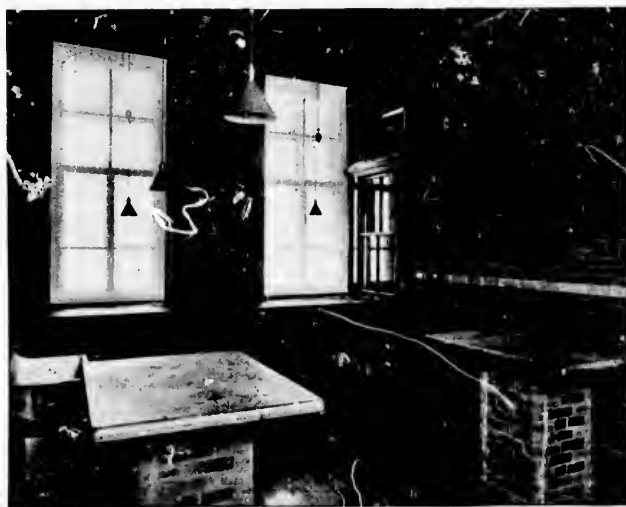
The north end of this floor contains the Advanced Electrical Laboratory, which is provided with a large amount of slate table partly cut from the walls, and partly supported on the piers rising from the Research Laboratory beneath. Deep slots in the walls connect the principal Laboratories (Heat, Electrical, Research and Magnetic) and carry circuits of heavy wire by which instruments in any of the rooms may be joined up in series, or parallel, or grounded. A long and dark photometer room runs beneath the Entrance Hall and Porch, and there are two separate smaller rooms provided with solid piers, intended for private use in research.

The Entrance Hall is reached by ascending half a flight of the stair case.

It remains to mention that the ventilation is by flues gathered to a fan in the turret, driven by a 5 H. P. Motor. The lighting is throughout by incandescent lamps supplied with direct current. In the Laboratories single lamps are adjustable over all the work tables, in addition to the pendants provided for general lighting. The current for lighting and for driving the motors in the work shop is supplied from the Macdonald Engineering Building. It will thus be seen that all the inconveniences arising from the presence of steam or gas engines in a Physical Laboratory are avoided, while the generation and storage batteries are naturally under the



RESEARCH LABORATORY



PRIVATE RESEARCH LABORATORY

care of the Department of Electricity and Magnetism from a similar angle, the two lower floors over the northern half of the building have been constructed entirely without iron. Doubtless the most important point was to allow no iron which could be subject to changes of temperature, as in the heating coils and radiators. These are accordingly of copper, but it was thought worth while to carry the arrangement to completion down to the nails of the flooring, and the lock, window and electric light fittings.

EQUIPMENT

The instruments have been chosen on a scale corresponding with the building to serve three purposes: (1) Illustration of Lectures, (2) Elementary Practical work by the students, (3) Advanced work by Fourth Year Students and Graduates and Private Research. The general principle has been not to select special arrangements for particular experiments, except in the case of those classical experiments which have a historical interest of their own, but to secure a very complete supply of fundamental instruments which are always in request, and from which any particular case can be built up. It must suffice to name a few typical instances under each head.

(1) ILLUSTRATION OF LECTURES.

The projection apparatus is very complete, including a New Non Electric Lantern similar to that used in the Royal Institution, London, with diagram, spectrum, and microscope fronts. The latter is of the Lewis Wright pattern, and there is a separate Lewis Wright polariscope with a polarizing model of 2" clear aperture. The Brooke-Peabody lamp with inclined carbons has given great satisfaction. It is steady, noiseless, and focus-keeping, and has