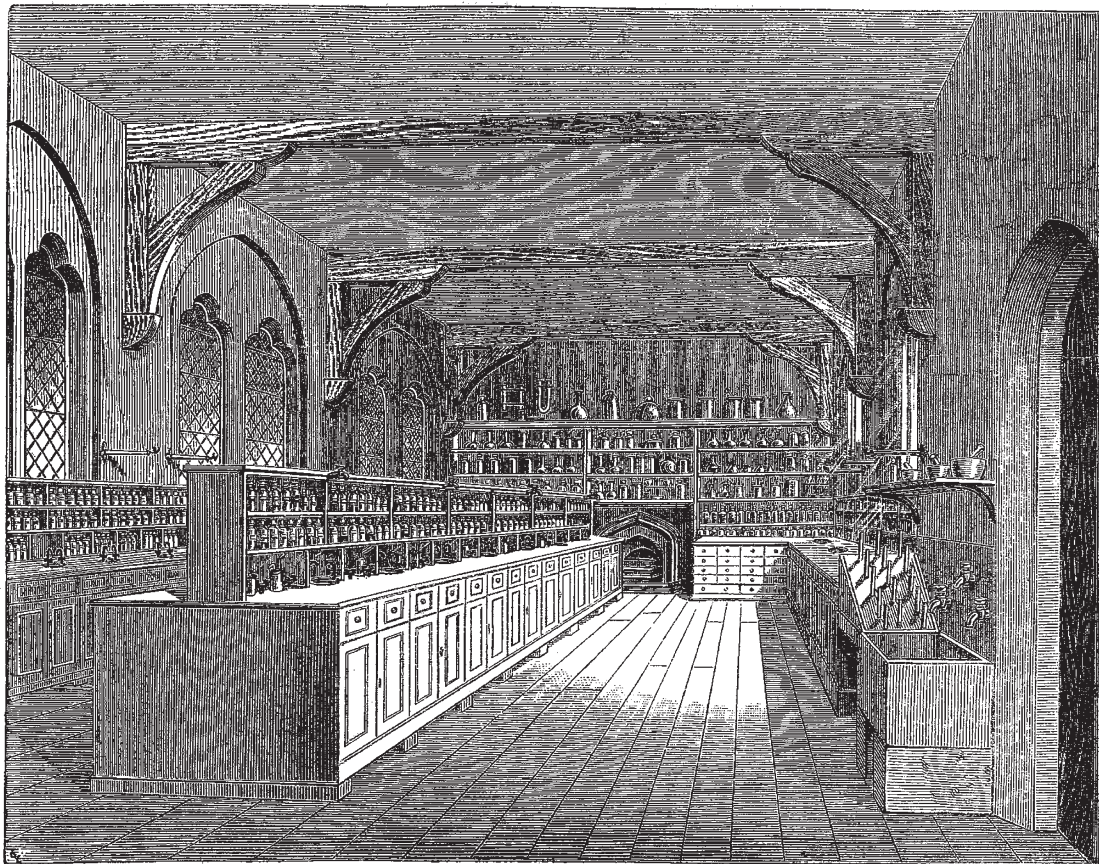


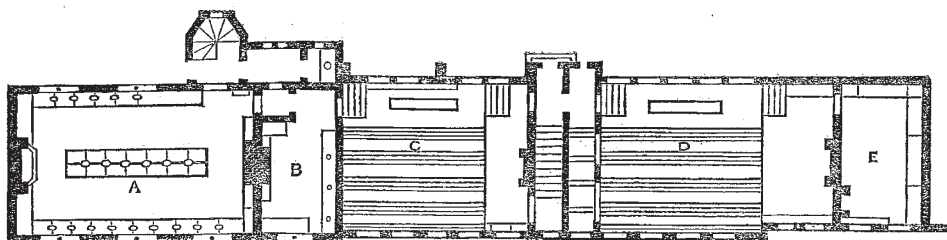
THE NEW NATURAL SCIENCE SCHOOLS  
AT RUGBY

ALTHOUGH a brief notice of the new schools at Rugby has already appeared in the pages of this journal, a more detailed account of them may not be unacceptable to the readers of NATURE, especially at a time when so much attention is being paid to the subject of science teaching in schools.

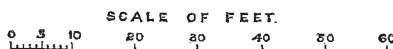
on each side of the centre table, and ten and six in those along the sides of the room. Each compartment comprises a cupboard and two drawers, two shelves for bottles, two gas taps, waste basin with water supply, and a working space of 3 ft. 6 in. by 1 ft. 9 in. The water taps and basins in the central table are placed so as to serve for boys working on either side, and thus much space is gained. The water taps have a small orifice, and



GENERAL VIEW OF LABORATORY



GROUND PLAN



The accompanying ground-plan will show the general arrangement of the rooms.

The laboratory is 35 ft. by 22, and is intended to accommodate thirty boys. It is not, properly speaking, one of the new schools, as it was formerly the only Natural Science lecture-room; but it has been much altered and entirely refitted, in order to convert it into a laboratory. The working tables are divided into compartments, seven

are specially adapted for filling test tubes. A water pipe is also carried along the highest shelf and there are taps at intervals for filling tall vessels, for working with Liebig's condenser, &c.

The sink, with arrangements for washing and drying bottles, is seen near the door in the drawing.

At one end of the room is an open fireplace, with shelves and nests of drawers on either side. The drawers

contain the various articles that are in general use in the laboratory, such as corks, cork-borers, elastic tubing, holders of different kinds, glass tubes and rods, &c. Every drawer is labelled on a simple plan that I find very convenient.

A bit of zinc is bent at an angle of  $45^\circ$ . The two edges of the one half are then just turned over, and the whole is screwed to the front of the drawer. A card slipped under the turned-down edges is held perfectly tight, and can be removed at any time. Labels so arranged are much more easily seen than if they were simply fastened to the face of the drawers. (One is shown in the figure.)



The lower shelves above the drawers contain all the dry chemicals required in Harcourt and Madan's "Practical Chemistry" (the book we chiefly use in the laboratory), together with the more costly re-agents, and others that are in less frequent use. Each boy has a complete set of all the ordinary acids and test solutions on the shelves of his compartment.

The contents of the drawers and shelves on either side of the fire-place are arranged in duplicate—a complete set on each side. In this way all chance of confusion and crowding is avoided, as no boy can have occasion to cross over from the side of the room on which he is working to the opposite side, everything being ready to his hand.

A common balance with sets of gramme weights is placed on the table above each nest of drawers. Here also are kept the various measuring flasks and cylinders. At the other end of the room is an ordinary six-feet kitchen range, which has been slightly modified so as to serve for a furnace. It has sand-bath, boiler, and drying-oven. On one side of the furnace is a cupboard to contain a stock of glass and porcelain apparatus. On the other side are two spacious evaporating closets with sliding glass doors. These are supplied with hoods and jets for creating a powerful draught. The draught can be still further increased, when necessary, by lighting a large ring of jets in the flue communicating with the closets.

A small cupboard for tools and a glass-blower's table complete the furniture of the laboratory.

The room marked B, in the ground plan, was formerly the only laboratory for the use of the school. It was built some years ago, at the same time as the Natural Science lecture-room, and, though small, was exceedingly well arranged. It is now converted into a private laboratory for the use of the chemical lecturer. It contains a large evaporating closet, also a sand-bath and distilling apparatus, both of which are worked by the fire in the school laboratory by means of appropriate dampers. Here also is the flue for obtaining a down-draught at the lecture-table in the adjoining chemical lecture theatre. As several pipes open into this flue it was found necessary to place the large ring of gas-jets for creating the draught at a considerable elevation above the floor. To light this ring an artifice was employed that it may be worth while to mention. A supplementary gas-pipe was carried alongside of the supply-pipe from a few feet above the floor to the ring of jets. This was pierced with small jets at short intervals all the way to the top. A separate tap turns on the gas in this pipe, and upon applying a light to the lowest jet the flame runs rapidly up the pipe and lights the ring at the top. The gas is then turned off from the supplementary pipe and the ring alone left burning.

From the private laboratory a door opens into the chemical lecture-room. This is provided with seats for fifty boys, the forms and desks rising tier above tier so that experiments at the lecture table are well seen by all. The down draught at the lecture table, already alluded to,

is most useful. Experiments with chlorine may be performed with hardly any smell escaping.

The theatre is well supplied with shelves, cupboards, apparatus cases, diagram-screens, and black-board. There is also a capital cellar for stock chemicals, batteries and empty cases.

The Physical Science lecture theatre, D, is of still larger dimensions, and will hold sixty boys. A space at one end is fitted up with work-tables, &c., where experiments may be prepared, and also where boys may themselves learn how to use physical apparatus under the eye of a master.

The walls of the room, E, are entirely lined with glass cases for the reception of the school apparatus. Here, also, is a lathe with table-vice and bench, where an assistant, accustomed to mechanical work, can make various lecture illustrations, and repair instruments that are out of order.

I ought to add that the Natural Science Schools are only part of an extensive block of new buildings containing several classical and other schools, and that the whole has been erected from the designs of Mr. W. Butterfield.

T. N. HUTCHINSON

#### NOTES

M. DELAUNAY is the new director of the Paris Observatory. We must congratulate the French Government upon their appointment. M. Delaunay, who has just received the Medal of our Royal Astronomical Society for his researches on the moon's motion, is an astronomer second to none, and is in every way admirably qualified for such an important post.

AT the Royal Society's Soirée on Saturday last, a number of interesting objects were exhibited, among which we may mention Mr. Roberts's specimens of electro-deposited iron; Mr. Siemens specimens of cast steel from the Landore-Siemens Works; a chronoscope of elaborate construction, exhibited by Capt. Noble, for recording at one observation the velocity with which a projectile passes different parts of the bore of a gun. The principle of this instrument is that of registering, by means of electric currents, upon a recording surface, travelling at a uniform and very high speed, the precise instant at which a shot passes certain defined points in the bore. It is capable of indicating intervals of time as minute as one-millionth part of a second. We shall again refer to some of the objects exhibited.

AT the meeting of the Royal Society last week, the names of the candidates for election, fifty-three in number, were read. From these, in accordance with the usual practice, fifteen will be chosen to be elected by the Fellows of the Society in June next. Last year the number of candidates was forty-five.

AT the same meeting two short papers were read from Mr. Le Sueur, who has charge of the great telescope at Melbourne, giving an account of his observations of some of the nebulae included in Sir John Herschel's Cape Catalogue. The details are interesting, and full of promise for the future; as are also the particulars of spectroscopic observations of Jupiter which accompany the observations of nebulae.

THE *Athenaeum*, in reporting that Mr. Hind has issued a circular showing the path of the moon's shadow in the eclipse of the sun which will take place on the 22nd December, remarks that it is to be hoped that our Government will send out an expedition thoroughly equipped with spectroscopes to settle the nature of the corona, one of the last remaining questions of solar physics.

It is satisfactory to know that the Municipal authorities of Glasgow are alive to the prospective benefits which their city is likely to gain, in a sanitary point of view, from the investigations which are to be instituted by the Sewage Committee