brought down for the information of the members, should they desire it.

In connection with this extract, it may be gratifying to know, that the Governor General highly approves of the contemplated arrangements, and has commissioned Dr. Ryerson to convey to Col. Lefroy, His Excellency's acknowledgments and thanks for his very valuable assistance in this matter.

The outline map of the Counties, exhibited to-night,* and which I have had specially prepared to accompany this memorandum, is designed to shew at a glance, the number and position of the proposed meteorological stations throughout Upper Canada. The position of the Senior County Grammar Schools is indicated on the map by a large black circle—Toronto, the chief and central station, being prominently marked. These will be for some time the principal stations; but as circumstances warrant, the Junior Grammar Schools, will, no doubt, become stations of equal importance and value with the others. I have indicated the position of these junior stations by a black cross. Some additional chief stations, which will be established when the now united counties become separated, I have marked with a square black figure. We have therefore :—

Contemplated Chief Stations	30
Additional Chief Stations	3
Junior Stations.....	40
Total Stations	— 73

From the junior stations it will be seen what are our resources should it be deemed advisable to multiply the Chief Stations and extend our system of observation still further throughout Upper Canada. No time, however, will be lost in establishing the Chief Stations; and it is hoped, that before the close of the present year, many of them will be in successful operation.

These facts and illustrations which I have presented, exhibit in detail, perhaps a little too minutely, all the information which is in the possession of the Department of Public Instruction on the subject. They show, conclusively, that the gentlemen at the head of that Department has never lost sight of the great practical importance, to a new and but partially settled country, of establishing (early in its history,) before its physical condition is materially changed, a complete and comprehensive system of meteorological observation, by which may be tested theories in Physical Science, which are yet unsettled; and by which may be solved questions relating to Natural Phenomena, which have long remained among the sealed mysteries of Nature.

Montreal Natural History Society.

An ordinary meeting of this Society was held in the Museum on Monday evening November 26,—the President, the Lord Bishop of Montreal in the Chair. There were present Drs. Workman, Fraser, Scott, Hingston, Barnston, and Messrs. Henshaw, H. J. Ibbetson, Dutton, and Rennie.—The minutes of last ordinary meeting were read over and approved.—Read a letter from Dr. Hall accompanying his meteorological observations during the last three months which he presented to the Society for preservation in its records.—Ordered that the donation be acknowledged with thanks, and that Dr. Hall be requested to continue his contribution.—The last report of the Upper Canada Board of Agriculture was laid on the table.—Application having been made for a loan of some of the specimens contained in the Museum to enable Mr. Principal Dawson to illustrate the course of lectures upon Natural History he is now engaged in delivering at McGill College, it was, Resolved, That upon receiving a list of the specimen's required, and the Principal's obligation to return the same, the Society are willing to accede to his request provided the Cabinet Keeper is satisfied that they can with safety be removed.—The meeting then proceeded to ballot, when the Rev. A. Kemp, Minister of St. Gabriel Street Church was unanimously elected an ordinary member. Several gentlemen were proposed as ordinary members; after which the meeting separated.

A. N. Rennie, *Recording Secretary.*

* A reduced copy of this Map is published herewith.

The British Association for the Advancement of Science.

On Alloys of Iron and Aluminum.—By Prof. F. C. Calvert.—Professor Calvert, in conjunction with Mr. Richard Johnson, has succeeded in producing a great many new alloys, having a definite chemical equivalent composition, and, therefore, bringing a large class of products, called alloys, into the general laws of the present day—Chemistry, the law of definite proportions or equivalents. These gentlemen have succeeded in preparing the following alloys of iron and potassium: *First Alloy*—1 equivalents of iron; 1 equivalent of potassium. *Second Alloy*—6 equivalents of iron; 1 equivalent of potassium. These alloys were prepared with the view of solving one of the great chemical and commercial questions of the day—namely, that of rendering iron less oxidable when exposed to a damp atmosphere, as these gentlemen believe that no kind of coating can be discovered which will resist the constant friction of water, as is the case with iron steamers. But all the alloys which they have produced up to the present time, with the exception of one, are oxidable, although some of them contain as much as 25 per 100 of potassium, the most electro-positive metal known, and the one most likely to render iron in that electro-chemical state, and less liable to combine with oxygen, the above alloys of potassium and iron were remarkable for their great hardness. They have also succeeded in producing two new alloys composed of iron, combined with that most valuable and extraordinary metal, aluminum, lately obtained by Mons. St. Claire Deville. These two alloys are composed as follows: *First Alloy*—1 equivalent of aluminium; 5 equivalents of iron. *Second Alloy*—2 equivalents of aluminium; 3 equivalents of iron. The last alloy presents the useful property of not oxidizing when exposed to a damp atmosphere, although it contains 75 per cent. of iron. The following alloys were also described, one composed of 1 equivalent of aluminum, and 5 equivalents of copper; one other of iron and zinc, composed of 1 equivalent of iron and 12 equivalents of zinc; and what is interesting respecting this last alloy is not only its extreme hardness, but that it is produced at a temperature of about 800°, it being formed in a bath of zinc and iron containing 14 tons of metal, and through which iron wire is passed when coated with zinc or galvanised. Messrs. Calvert and Johnston took advantage of having such a large melted mass of metals (zinc and iron) to inquire into the following question, viz., if two metals, when melted together, separate according to their respective specific gravity or form a homogeneous mass combined in definite proportions. They consequently analysed three samples taken from the melted bath, one near top, one in the middle, and one at the bottom. Strange to say, they all presented a different composition, and what is not less remarkable, is, that the upper layer contained the largest proportion of the heaviest metal. These three samples offered the following equivalents and definite compositions:—*Top*—1 equivalent of tin, 11 do. of zinc. *Middle*—1 equivalent of tin, 16 do. of zinc. *Bottom*—1 equivalent of tin, 19 do. of zinc. It would appear from their researches, that by preparing commercial alloys according to fixed scientific rules, instead of mere routine, they hope to produce for commerce cheaper alloys than those now in use. The action of acids on these alloys of copper, zinc, &c., presents this curious fact, viz., that although hydrochloric acid affects violently zinc and tin, still in alloys containing these metals with copper, they are but very slightly attacked by this powerful acid. Similar results were also obtained by sulphuric and nitric acids.

On Some of the General Mechanical Structures of Limestone.—By H. C. Sorby, F.G.S.—The author considers that the only satisfactory method of ascertaining the structure of limestones is to examine thin sections of them with the microscope. The results described in this paper were arrived at in this manner. Limestones have been usually described as more or less crystalline or earthy, but this has reference chiefly to subsequent changes, and not to their original condition. When examined with the microscope, it is seen that to describe them according to their mechanical characters would usually be far better. In this manner they may be very conveniently classed as organic sands or clays, in the same way that we may speak of felspar sand or clay. The organic structure of the minute fragments of which they are composed is often so well preserved, that their nature and relative proportions can be satisfactorily determined. When they have been consolidated, the shrinking of the mass has often produced cracks and joints, after-