6 feet below its 1871 level, or 2225 feet above the sea. It appears, therefore, that in 7 years, 1871 to 1878, the lake lost 6 feet; and again, from May, 1878, to February, 1885, say seven years, the lake again lost 6 feet by evaporation, and this of course in addition to all the rain which fell during that period. Taking the records at Goulburn and Gungahleen, near the lake, the average rainfall for the first 7 years was 27·95 inches, and during the next 7 years 23·68 inches. One would expect to find more evaporation during the drier years, but this is not borne out by observations. From the rainfall and recorded evaporation the lake, therefore, lost by evaporation at least 3 feet per annum. I say at least, because some rain water must have run into the lake in addition to that which fell into it directly, but its amount cannot be determined. In future the recording gauge will determine this, and perhaps then we may apply the experience gained to estimating how much ran in during the past fourteen years. Lake George is called a fresh-water lake, and some have even gone so far as to propose to use it as a reservoir for the supply of towns. When there I ascertained that no one could use the water on account of its purgative properties, one glass full being quite enough to satisfy those who made use of it; and it is there said that the water running into the lake from the Currawang copper mine had poisoned all the fish. This is not literally true, for there are still fish in the lake; but very many were killed some years since, presumably by the cause mentioned. I obtained some of the water, and am indebted to Mr. Dixon, of the Technical College Laboratory, for the following interesting information as to what the water contains:—It is quite evident that with 187·5 grains of mineral matter per gallon the water cannot be used for domestic purposes, and from the fact that this matter is constantly being added to, it cannot improve, unless it were possible to withdraw large quantities of the water, and supply its place with rain-water; but during by far the greater number of years during which the lake has been known, viz., 64 years, the supply of rain-water going into it annually has not been equal to the evaporation, and there is no other outlet. After the great flood of 1870 the lake, during the last 14 years, has gradually decreased by nearly a foot per annum, and similar conditions existed before; and it is therefore obvious that it would not be possible to wash out the salts with rain-water and artificial drainage except in wet years—perhape once in 20 years. Extract Mining Department's report, 1880:—'Three samples of water from the Currawang Copper mines were sent for analysis, with special reference to their poisonous action on the fish in Lake George, and were therefore only examined with regard to the metals in solution. The metals were present as sulphates, and are stated below:—Water from the creek contains: Sulphate of copper, 1·12 grains per gallon; sulphate of zinc, 16·78 grains per gallon; sulphate of iron, 0·43 grains per gallon. Water from the working shaft: Sulphate of copper, 17·67 grains per gallon; sulphate of zinc, 53·54 grains per gallon; sulphate of iron, 1·42 grains per gallon. Water from the old shaft: Sulphate of copper, 6·42 grains per gallon; sulphate of zinc, 7·20 grains per gallon; sulphate of iron, 0·98 grains per gallon.' This water would necessarily be poisonous to fish, and flowing into a lake without outlet, would ultimately render the whole water poisonous. 'Technical College Laboratory, Sydney, 2nd May, 1885. My dear Mr. Russell,—The water from Lake George contains 187·5 grains per gallon of solid matter dried at 212° F. The residue has a strongly alkaline reaction, effervesces with acid, blackens much on ignition, but does not show the presence of nitrates in doing so. The metals present are aluminium, calcium, and magnesium; the acids chlorine, carbonic acid, sulphuric acid, and phosphoric acid, the last two in small quantity. The salts are probably arranged as chloride of sodium, sulphate of sodium, phosphate of sodium, carbonate of sodium, and carbonates of calcium and magnesium. The purgative properties of the water are probably due to the salts as a whole, and especially the carbonate of magnesia. It should be borne in mind, however, that waters containing much organic matter frequently have a purgative effect.—Signed, W. A. DIXON. P.S.—Zinc and copper are entirely absent.'"

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

SCIENCE AND ART DEPARTMENT.—The following Prizes, Scholarships, Associateships, &c., have been awarded in connection with the Normal School of Science and Royal School of Mines, South Kensington.

First Year's Scholarships:—James Rodger, Andrew McWilliam, Tom. H. Denning, John Richards.

Second Year's Scholarships:—Arthur E. Sutton, Thomas Rose.

The following Prizes were also awarded:—Alfred V. Jennings, the "Edward Forbes" Medal and Prize of Books for Biology; Arthur E. Sutton, the "Murchison Medal" and Prize of Books for Geology; and the "Tyndall Prize" of Books for Physics, Course I.; Henry G. Graves, the "De la Beche" Medal for Mining; John C. Little and James Allen, "Bessemer" Medals with Prizes of Books from Prof. W. Chandler Roberts for Metallurgy; Arthur W. Bishop and Peter S. Buik, the "Hodgkinson" Prizes for Chemistry.

Associateships, Normal School of Science:—Isaac T. Walls (Chemistry, 2nd Class); Alfred Fowler (Mechanics, 1st Class); George H. Wyatt (Physics, 2nd Class); Martin F. Woodward (Biology, 1st Class).

Associateships, Royal School of Mines:—John C. Little (Metallurgy, 1st Class); Thomas A. Rickard (Metallurgy, 1st Class); Percy E. O. Carr (Metallurgy, 1st Class); Walter A. A. Dowden (Metallurgy, 2nd Class); Henry G. Graves (Mining, 1st Class); Ernest Woakes (Mining, 1st Class).

DR. REDWOOD has retired as Emeritus Professor from the Chair of Chemistry at the Pharmaceutical Society. The vacancy has been filled by the appointment of Mr. Wyndham Dunstan, Demonstrator of Chemistry in the University Museum of Oxford.

SCIENTIFIC SERIALS

Rendiconti del Reale Istituto Lombardo, May 21.—A science of criminal legislation in connection with the projected Italian Penal Code, by E. A. Buccellati.—Note on the inscribed Etruscan arms and mirrors in the Fol Museum, Geneva, by Prof. E. Lattes.—The system of projected homogeneous co-ordinates for the elements of ordinary space, by Prof. F. Aschieri.—On the separation of cream from milk, and the conditions tending to accelerate the process, by Prof. G. Morosini.—Further researches on the functions that satisfy the differential equation $\Delta^2 u = 0$, by Prof. Giulio Ascoli.—Remarks on the Mexican skulls deposited in the Civic Museum, Milan, by E. A. Verga.—Meteorological observations made at the Brera Observatory, Milan, during the month of May.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, June 18.—"A Memoir introductory to a General Theory of Mathematical Form." By A. B. Kempe, M.A., F.R.S.

The object of the memoir is the treatment of the "necessary matter" of exact or mathematical thought as a connected whole; the separation of its essential elements from the accidental clothing—algebraical, geometrical, logical, &c.—in which they are usually presented for consideration; and the indication of that to which the infinite variety which those elements exhibit is due.

The memoir opens with the statement of certain fundamental principles, viz.:—Whatever may be the true nature of things and of the conceptions which we have of them (as to which points we are not concerned in the memoir to inquire) in the operations of reasoning they are dealt with as a number of distinct entities or *units*.

These units come under consideration in a variety of guises—as points, lines, statements, relationships, arrangements, intervals or periods of time, algebraical expressions, &c., &c.—occupy various positions, and are otherwise variously circumstanced. Thus, while some units are undistinguished from each other, others are by these] peculiarities rendered distinguishable. For example, the angular points of a square are distinguishable from the sides, but are not distinguishable from each other. In some instances where distinctions exist they are ignored as not material. Both cases are included in the general statement that some units are distinguished from each other and some are not.

In like manner some *pairs* of units are distinguished from each other while others are not. Pairs may be distinguished even though the units composing them are not. Thus the angular points of a square are undistinguishable from each other,