the Secretary of the Society, or by personal application between the hours of 11 and 5.

THE *Photographic News* of March 11 publishes an excellent photo-engraving of Fox Talbot.

MR. W. HEIGHWAY has issued a useful "Handbook of Photographic Terms," an alphabetical arrangement of the processes, formulæ, applications, &c., of photography for ready reference. Piper and Carter are the publishers.

A NEW Natural History Society has been formed at Banbury under the title of "The Banburyshire Natural History Society and Field Club." Mr. T. Beesley, F.C.S., is president, and Mr. E. A. Walford, hon. secretary.

THE *Times* Dublin correspondent telegraphed on Sunday night:—"A very interesting scientific work, the most important of its kind yet attempted in the kingdom, has just been completed. It is the great refracting telescope, constructed by Mr. Grubb of Rathmines, Dublin, for the Austro-Hungarian Government, and it is to be placed in the Observatory at Vienna. A commission appointed by the Government to examine the work transmitted yesterday to the Austro-Hungarian Embassy in London a report expressing their full approval of the manner in which the task has been completed. It is a matter of no little pride to Ireland that she has produced the largest refracting as well as the largest reflecting telescope in the world." Several interesting details concerning the telescope are give in the *Irish Times* of March 10.

M. LOUIS FIGUIER'S *L'Année Scientifique et Industriel*, published by Hachette and Co., is a really useful summary of the science of the year. The twenty-fourth issue is quite up to previous volumes, and in the absence of anything of the kind published in this country may prove serviceable to English readers.

THE *Annuaire* of the Montsouris Observatory for 1881 contains much useful information in meteorology and allied subjects. Under the head of Agricultural Meteorology are a variety of experimental data on the action of heat, light, and water on vegetation, with their application to special cultures. There is also a meteorological *résumé* for the agricultural years 1873-80, and an article on Bacteria in the Atmosphere.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus radiatus*) from India, presented by Mr. R. W. Okes-Voysey; an Azara's Fox (*Canis azaræ*) from Buenos Ayres, presented by Mr. William Petty; a Gold Pheasant (*Thaumalea picta* ♂) from China, presented by Mr. W. H. St. Quintin; an Ornamental Ceratophys (*Ceratophys ornata*) from Buenos Ayres, presented by Mr. E. W. White, F.Z.S.; a Water Vole (*Arvicola amphibius*), British, purchased; two Dingo Dogs (*Canis dingo*), born in the Gardens.

CHEMICAL NOTES

OBSERVATIONS have been published from time to time concerning the existence of alkaloid-like substances in exhumed corpses. These substances appear to be produced in organised matter which, after brief exposure, has been kept out of contact with air. A summary of these observations and a discussion on their bearing on toxicological examinations is given by Husemann in a recent number of *Archiv für Pharmacie*. Substances having different physiological actions appear to be produced at various stages of decay of flesh or vegetable matter. A substance resembling atropine in its action has been separated from an anatomical maceration fluid by Sonnenschein, and this same substance has been found in the bodies of persons who have died from typhus fever.

AN important paper on "The Influence of Isomerism of Alcohols on the Formation of Ethereal Salts," by Menschutkin, appears in *Annales Chim. et Phys.* The process of etherification reaches a limit in every instance, but this limit varies with the molecular weight, and generally with the "structure" of the alcohol employed. In the ethylic series the limit increases with increase of molecular weight, but is not influenced by isomerism; in the secondary alcohols the limit does not show an increase for increased molecular weight. The influence of isomerism is most marked in this series.

IT is well known that by adding dilute acid to a solution of sodium thiosulphate and warming, a copious precipitate of yellow sulphur is obtained. Colson states in *Bull. Soc. Chim.* that when a very dilute solution of sodium thiosulphate is added to dilute hydrochloric acid, hydrogen sulphide and sulphuric acid are alone produced. He supposes that the water present acts on the sulphur as quickly as it is liberated from the thiosulphate, in the manner indicated; if flowers of sulphur be acted on by boiling water, a similar reaction occurs, but proceeds only very slowly.

FROM a study of the thermal phenomena which accompany the action of water on alcohols, and of alcohols on water, Alexejeff (*Bull. Soc. Chim.*) concludes that hydrates of the saturated alcohols exist, which hydrates are less stable the greater the number of carbon atoms in the molecule.

THE heats of formation, and of solution, of a large series of metallic sulphides, and sulphydrates, principally those of the alkalis and alkaline earths, have been determined and published in *Annales Chim. et Phys.* (January), by M. Sabatier.

IN an investigation of alcoholic fermentation (*Annales Chim. et Phys.*) Boussingault states that by the addition of a large quantity of yeast to wines rich in sugar, fermentation proceeds rapidly at a boiling temperature, provided the pressure be considerably diminished.

IN the *Berliner Berichte* Herr T. Donath describes experiments on *chinolin*, in which he shows that this alkaloïd possesses marked antiseptic properties: in 0·2 per cent. solution it stops the putrefaction of urine and lactic fermentation; in 0·4 per cent. solution it completely stops the putrefaction of blood and largely decreases the coagulation of milk. Blood containing 1 per cent. of chinolin cannot be coagulated. At low temperatures the alkaloïd forms compounds with albumin, which coagulate.

IN a paper "presented to both Houses of Parliament" the subject of "*oleomargarine*" as manufactured in the United States is discussed. This substance is made from beef suet by disintegrating in warm water, passing through a fine sieve, melting at 120° F., settling, draining off the oil, and allowing to solidify. If "*butterine*" is to be made, the oil is mixed with 10 per cent. of milk, churned, coloured with annatto, rolled with ice, and salted. During the year ending June 30, 1880, 18,833,330 lbs. of oleomargarine were exported from New York, the greater part going to Holland. The manufacture and sale of this substance is strongly condemned by many butter merchants, and as strongly recommended by various well-known American chemists. Analyses given in the report show very small differences between oleomargarine and natural butter, except in the particular of soluble fats, of which oleomargarine contains considerably less than natural butter.

THE Newcastle-upon-Tyne Chemical Society publishes in its *Proceedings* a paper by R. Hasenclever, on the alkali manufacture in Germany in 1880, in which it is shown that the consumption of alkali in Germany at present exceeds the supply, and that manufacturers are now extending their works and building new ones. The ammonia process is coming largely into use; the cost of plant and expenses are less than when Leblanc's process is employed; but the latter process is also extending year by year.

A NEW journal, devoted to analytical chemistry, has just made its appearance with the title *Repertorium der analytischen Chemie;* it is published by Voss of Leipzig, and promises to be useful to those who are interested in this branch of applied science.

OBSERVATIONS on the production of crystalline albuminoid compounds have from time to time been published. In a recent number of *Zeitschrift für Krystallographie* a general account of these observations is given by Herr Schimper, and the following, among other, general statements are made: albumenoid substances are capable of crystallising, but the crystals (or crystalloids, as they are called) differ from ordinary crystals in their

mode of growth; the angles of crystalloids are also probably somewhat variable. The crystalloids being chiefly regular and rhombohedral forms, some are compounds containing metals—chiefly magnesium, calcium, barium—others are free from metals. The growth is connected in a definite manner with the crystalline form; the forms of the regular crystalloids remain unchanged, while the rhombohedral crystalloids undergo changes in their angles, the maximum growth being in the direction of the principal axis. The growth and solubility of the crystalloids are not equal throughout; they increase from without inwards, so that in dilute reagents the growth or the solution begins in the middle. The crystalloids are also frequently distinguished, like starch granules, by layers of unequal growth.

HERR BALLO states in *Berliner Berichte* that if camphor be heated with a quantity of spirit of wine, containing from 36 to 65 per cent. ethylic alcohol, such that some of the camphor remains undissolved, fusion of the camphor occurs on the surface of the alcohol, and the melted camphor either floats on the surface of the alcoholic solution, or sinks to the bottom according to the specific gravity of the liquid.

IN reference to the observations of Hautefeuille and Chappuis regarding "pernitric acid," recently mentioned in these Notes, the following details may be of interest. If a perfectly dry mixture of oxygen and nitrogen is ozonised, and the absorption spectrum of a layer about two metres long of this mixture is observed, certain fine dark lines are noticed in the red, orange, and green, in addition to the characteristic absorption bands of ozone. These lines are not exhibited by nitrogen, nitrous anhydride, nitrogen tetroxide, or nitric anhydride, when submitted to the action of the electric discharge. If the gas which exhibits the new lines be conducted through water, the water acquires an acid reaction, and the ozone bands alone remain in the spectrum. If the gas be heated to redness the spectrum of nitrogen tetroxide appears. If the gas be allowed to remain at ordinary temperatures the new lines gradually fade away; after twenty-four to forty-eight hours they have entirely disappeared; the spectrum of nitrogen tetroxide becomes gradually more prominent, and reaches a maximum after a few days. The same lines are noticeable in the absorption-spectrum of the gas produced by the action of the electric discharge on a mixture of nitrogen tetroxide and oxygen. The authors conclude that the newly-observed lines are due to the presence of an oxide of nitrogen containing relatively more oxygen than N_2O_5, *i.e.* to the anhydride of "pernitric acid."

METEOROLOGICAL NOTES

IN a paper on the "Marche des Isotherms au Printemps dans le Nord de l'Europe," Prof. Hildebrandsson of Upsala Meteorological Observatory has struck out a fresh line of inquiry and produced results at once of great scientific and practical value. In a series of five maps he shows the advances with season northwards over North-Western Europe of the isotherms of 32°·0, 37°·4, 42°·8, 48°·2, and 53°·6 respectively, the isotherms being thus 5°·4 (or 3°·0 C.) apart. On January 15 the isotherm of 32°·0 proceeds along the south coasts of the Black Sea and thence westwards to near Lyons, from which point it strikes northwards, passing into the North Sea at Gröningen, and skirts the west of Norway as far as Christiansund. The progress northwards and eastwards of this isotherm at the subsequent fortnightly epochs is extremely instructive, the advance northwards over the plains of Russia being manifoldly more rapid than its advance over the south-west of Norway. By May 1 the mean temperature of the whole of North-Western Europe has risen above 32°·0 except a small portion from the North Cape to the White Sea. In the height of summer the isotherm of 53°·6 (12° C.) reaches its northern limit, and then includes the whole of Europe except a thin slice of Norway from Vardö to the Lofoden Isles. Since on April 15 this isotherm skirts the southern shores of the Black Sea, its advance northwards is much more rapid than that of 32°·0. Specially instructive is it to note the influence of the various seas and mountain ystems on the seasonal advance of the different isotherms. An interesting table is given showing the time taken by various natural phenomena to advance a degree of latitude northwards along the shores of the Baltic. The flowering of plants takes 4·3 days in advancing over a degree of latitude in April, 2·3 days in May, 1·5 days in June, and 0·5 days in July; the ripening of fruits generally 1·5 days; and the fall of forest leaves 2·3 days. Hence the phenomena are propagated with the greatest rapidity when the temperature approaches and reaches the annual maximum.

SOME months ago Miss Ormerod made a present to meteorologists of some value in her book entitled "The Cobham Journals," which gives an appreciative, well-written, and in some respects novel and ingenious account of the meteorological and phenological observations made by the late Miss Caroline Molesworth at Cobham, from 1825 to 1850. For each of the years complete tables are given of temperature, rainfall, and wind, which include also a comparative table for temperature and rain for Chiswick, taken from Glaisher's discussion of the Chiswick meteorological observations from 1826-69. Along with these tables are printed full notes setting forth the main features of the weather of each month, the month being divided into more or fewer sections, according to the number of types of weather which prevailed; and a detailed account of the accompanying phenomena of vegetation and animal life. In the general summary appended to the work the bearings of weather on plant and animal life are more specially dealt with, and a valuable table is given showing the dates of the flowering of plants, the leafing of trees, the ripening of fruits, and the arrival of birds. What is much to be admired in the work is the modesty, conscientiousness, and earnestness everywhere manifest, and these qualities of the scientific worker, it may be added, equally characterise the admirably-planned and worked scheme of Observations of Injurious Insects the author is now conducting so successfully.

AT the General Meeting of the Scottish Meteorological Society held on Friday last, Mr. Buchan read a paper on the atmospheric pressure of the British Islands, based on the observations of the last twenty-four years at about 300 stations. The mean pressure of these Islands taken as a whole is very nearly 29·900 inches, this isobar crossing the country from Galway to Newcastle. From this it rises southwards to 29·983 inches in the Channel Isles, and falls northward to 29·780 inches at North Unst in the extreme north of Shetland, there being thus a difference of about two-tenths of an inch of mean pressure between the extreme south and north. As regards individual stations the annual monthly maximum is attained in May, to the north of a line drawn from the mouth of the Shannon to the Wash, and thence round to Colchester, and the excess of this month's pressure is the greater as we advance north-westwards to the Hebrides; it is greatest in July over the extreme south of Ireland and the extreme south-west of England; but elsewhere the highest monthly mean is in June. The maximum in May over the whole of the northern portion of these Islands is connected with the maximum during the same month over arctic and sub-arctic North Atlantic, and regions adjoining, and the maximum in July over the south west is connected with the high pressure which obtains in this month over the Atlantic between Africa and the United States. The July pressure of the south-east of England is lowered from its proximity to the Continent, where pressure falls to the minimum in July. The mean monthly minimum occurs in January everywhere to the north of a line from Galway to Berwick; in March to the east of a line from Hull to Osborne; and in October over the rest of England and Ireland, which thus includes the larger portion of the British Islands. Of these depressions in the annual march of the pressure, by far the largest is the January one, which in the Outer Hebrides falls to 0·080 inch below the mean of any other month. It is there accordingly where the great diminution of pressure in the north of the Atlantic during the winter month is most felt. The greatest difference between the extreme north and south, amounting to nearly 0·400 inch, takes place in January, and it is in this month when the isobars lie most uniformly from west-south-west to east-north-east, thus giving the gradient for the south-westerly winds which prevail in this season. The least variation occurs in May, the extremes being 30·002 inches in Scilly in the south, and 29·906 inches at North Unst in the north, being thus only a fourth part of the difference which obtains in January. The greatest divergence from parallelism among the isobars occurs in July, where the arrangement somewhat resembles a fan with the hand part in the west of Ireland, and the lines opening out to their greatest extent in the east of Great Britain—adisposition of the lines due to the position of Great Britain between the high pressure which at this season overspreads the Atlantic to the south-west, and the low pressure which is so characteristic a feature of the meteorology of the old Continent in summer.

THE temperature of January last was of a character sufficiently striking and unusual as to call for a permanent record in ou