comparatively exposed situations more compact leaves may be more suitable. It was pointed out that finely cut leaves are common among low herbs, and that some families which among the low and herbaceous species have such leaves, in shrubby or ligneous ones have leaves more or less like those of the laurel or beech.

Much light is thrown on the subject by a study of the leaves of seedlings. Thus the furze has at first trifoliate leaves, which gradually pass into spines. This shows that the furze is descended from ancestors which had trifoliate leaves, as so many of its congeners have now. Similarly, in *some* species which when mature have palmate leaves, those of the seedling are heart-shaped. He thought that perhaps in all cases the palmate form was derived from the heart-shaped. He then pointed out that if there were some definite form told off for each species then a similar rule ought to hold good for each genus. The species of a genus might well differ more from one another than the varieties of any particular species; the generic type might be, so to say, less closely limited; but still there ought to be some type characteristic of the genus.

He took, then, one genus, that of Senecio (the groundsel). Now in addition to Senecios more or less resembling the common groundsel, there were species with leaves like the daisy, bushy species with leaves like rosemary and the box, small trees with leaves like the laurel and the poplar, climbing species like the convolvulus and bryony. In fact the list is a very long one, and shows that there is no definite type of leaf in the genus, but that the form in the various species depends on the condition of the species. From these and other considerations he concluded that the forms of leaves did not depend on any inherent tendency, but to the structure and organisation, the habits and requirements of the plant. Of course it might be that the present form had reference to former and not to present conditions. Nor did it follow that the adaptation need be perfect. The tendency existed, just as water tends to find its level. This rendered the problem all the more complex and difficult.

The lecture was illustrated by numerous diagrams and specimens, and Sir John concluded by saying the subject presented a wide and interesting field of study, for if he were correct in his contention every one of the almost infinite forms of leaves must have some cause and explanation.

SCIENTIFIC SERIALS

Journal of the Russian Chemical and Physical Society, vol. xvi. fasc. 8.—On the oxidation of acetones, by E. Wagner (first paper dealing with their behaviour towards chromic acid).—On the specific volumes of chlorine, iodine, and bromine in organic compounds, by M. Schalfejeff (second paper). For chlorine they gradually rise with the increase of the number of equivalents entering into combination, gradually reaching 21, 24, and 27; for bromine they are 24, 27, and 30; and for iodine, 26 to 27.—Addition of methylamine to methylglycidic acid, by M. Zelinsky.—On Astrakhanite, by W. Markovnikoff.—On the influence of the lineary compression of iron, steel, and nickel rods on their magnetism, by P. Bakmetieff. From a varied series of experiments the author arrives at a series of conclusions, showing that compression of iron rods exercises a very notable influence on their magnetisation, and that the phenomena depend upon the rods having been, or not, formerly submitted to repeated compression; all kinds of iron and steel display the influence of compression—soft iron and steel at a higher degree than hard iron and steel. The theory of rotating molecular magnets would explain all observed phenomena.—On an amperometre based on the electrothermic phenomenon of Pelletier, by N. Hesehus.—On the regular forms taken by powders, by Th. Petrushevsky (second paper dealing with the shapes taken by heaps of powders on surfaces limited by curves, or polygones with entering angles).—Also on the dilatation of liquids; an answer to Prof. Arenarius, by D. Mendeleeff.—An answer to M. Rogovsky, by B. Stankewitsch.—An answer to M. Sokoloff, by M. Bardsky, being a further mathematical inquiry into the forces of molecular attraction.—An answer to M. Petroff, by M. Kraevitsch.—We notice an innovation in this fasciculum of the *Journal*. It contains detailed minutes of the proceedings of the Physical and Chemical Section of the Moscow Society of Lovers of Natural Science.

Sitzungsberichte der Physicalisch-medicinishen Societät zu Erlangen, No. 16, October, 1883, to October, 1884.—Remarks on the phenomenon of phosphorescence in connection with the description of an instrument designed for studying the effect of the various spectral rays, and especially the ultra-red on phosphorising substances, by E. Lommel.—On the fluorescence of calcspar, by E. Lommel.—On the reduction of algebraic differential expressions to normal forms, by M. Noether.—Contributions to the knowledge of the Chytridiaceæ and other fungoid organisms, with thirty-seven illustrations, by D. C. Fisch.—On the malaria and intermittent fevers of the Erlangen district, by Prof. F. Penzoldt.—On the presence of microscopic organisms in the tissues of animals in the normal state, by Dr. Hauser.—Test of the sensitiveness of the visual organ to direct and oblique luminous rays, by Dr. Louis Wolfiberg.—On algebraic differential expressions, and on Jacobi's reverse problem, by M. Noether.—On the systematic position of the yeast fungus, by M. Reess.—On two new species of Chytridiaceæ, by C. Fisch.—On the nerves of temperature and touch in the animal system, by J. Rosenthal.—On a means of determining the quantity of carbonic acid present in the atmosphere of rooms, by J. Rosenthal.—On the phenomenon of Uræmia, by Dr. R. Fleischer.—Toxicologic researches from the physiological standpoint, by J. Rosenthal.—On vertigo caused by intestinal affections, by W. Leube.—Experiments on the hatching of bird's eggs whose shells had suffered lesion, by Prof. L. Gerlach.—On Oidema, by Dr. R. Fleischer.—On the surgical operation of opening the mastoid process, by Dr. W. Kiesselbach.—On the life-history and pathological properties of a species of bacteria causing putrefaction, by Dr. G. Hauser.—On the histiology of primary carcinom in the osseous system, by Dr. von Düring.—On a case of lingual tuberculosis, by Dr. Ernst Graser.—On the after-treatment of external urethrotomy, by H. Knoch.

Rivista Scientifico-Industriale, December 31, 1884.—On the electric conductivity of the alcoholic solutions of some chlorides, by Dr. Joseph Vicentini.—Memoir on the variations in the electric resistance of solid and pure metal wires according to the temperature (continued), by Prof. Angelo Euro.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, February 12.—"On Underground Temperatures, with Observations on the Conductivity of Rocks, on the Thermal Effects of Saturation and Imbibition, and on a Special Source of Heat in Mountain Ranges." By Joseph Prestwich, M.A., F.R.S., Professor of Geology in the University of Oxford.

The author remarks on the difference of opinion between physicists and geologists respecting the probable thickness of the outer crust of the earth—the former on the strength of its great rigidity and the absence of tides, contending for a maximum thickness and comparative solidity of the whole mass; while the latter, in general, on the evidence of volcanic action, the crumpling and folding of the strata in mountain ranges, its general flexibility down to the most recent geological times, and the rate of increase of temperature in descending beneath the surface, contend for a crust of minimum thickness as alone compatible with these phenomena.

The question of underground temperature, which is a subject equally affecting the argument on both sides, had engaged the author's attention in connection with an inquiry respecting volcanic action, and he was induced to tabulate the results to see how far the usually received rates of increase were affected by various interfering causes—not that most of them had not received due attention, but it was a question whether sufficient allowance had been made for them.

Although Gensanne's first experiments were made in 1740, and others were subsequently made by Daubuisson, Saussure, and Cordier, in coal and other mines, it was not until the construction of deep artesian wells commenced in the second quarter of this century, and Walferdin introduced his overflow thermometer, and precautions were taken against pressure, that the more reliable observations were made and admirably discussed by Arago. The Coal Commission of 1866 collected a mass of important evidence bearing on the question, and in 1867 a Committee of the British Association was appointed to collect further information. Under the able superintendence of Prof. Everett, a series of valuable experiments with improved instruments has