

but one would expect in that case to find pyramidal rather than conical shapes, or at least to find some shaped so as to complement the cones. I failed to notice any indications of such shapes in the specimens (about thirty) which I examined. I should be inclined to believe that the soft, snow-like portions had been formed during the passage of the harder stranded stones through a moist and possibly clouded stratum of air.

"I was unable to see how they reached the ground, whether point or blunt end downwards. If in the latter way, one could account for the soft part, as being formed from previously unfrozen particles, cooled by contact with the nucleus, and, so to speak, sliding back to a position sheltered from the air, as it swept by the sides of the cone.

"But if the narrower end were foremost (and that would be the more natural position), then, unless the little mass—like an iceberg—could freeze particles in front of it before reaching them, it would seem that the snow point must have resulted from the accretion of small particles already frozen, and the pointed shape would be what we should expect. The only rotatory motion possible would be that in a plane perpendicular to the direction of the path through the air, and might account for the conical shape, the edges of any pyramid being rounded off."

M. A. Wentzil, of Izedhno, near Warsaw, writes to us of a hailstorm which occurred there on the 4th inst. "At 3 o'clock in the afternoon," he says, "hail began to fall, at first of small size, but in a few minutes the hailstones increased to the size of walnuts. Nine such which I picked up at hazard weighed together 13 lut (0.165 kilo). They were almost spherical with a mean diameter of $1\frac{1}{2}$ English inches. In the centre of each was a kernel of clear ice about the size of a pea, and from this kernel radiated conical masses of white ice, so that the surface of the hailstone was like that of a mulberry, the interspaces being filled with clear ice. The damage in the gardens and to glass panes was, as may be imagined from the size of the stones, considerable

On March 3 we printed a letter from Mr. C. S. Middlemiss, describing a fall of top-shaped hailstones near Ramnagar, in the North-West Provinces of India (NATURE, vol. xxxv. p. 413). Writing to us on March 7, Mr. T. Spencer Smithson said (p. 438) that a fall of hailstones, almost exactly similar to those described by Mr. Middlemiss, had taken place in the neighbourhood of Rochdale on August 6, 1885. Mr. Smithson, however, pointed out that besides the horizontal stratification in these hailstones there was a perpendicular one, giving each hailstone the appearance of being composed of alternate cylinders of clear and white ice; and he asked Mr. Middlemiss to state whether the hailstones seen at Ramnagar had this peculiarity. Mr. Middlemiss now writes to us, in reply to Mr. Smithson's question, that the broad end of the hailstones showed no trace of any divisional planes whatever, being perfectly amorphous as originally stated. "The banded portion, so far as my memory serves me," he says, "may have possessed a faint longitudinal striation, just sufficient to run the bands together and to induce me to shade the diagrams vertically rather than horizontally, but I cannot be certain of it. It was not a marked feature, I feel sure."

SCIENTIFIC SERIALS.

Rivista Scientifico-Industriale, February.—The total solar eclipse of August 19, 1887, by Prof. Cacciatore. Prof. Tacchini having at the last eclipse established the presence round the sun of delicate white protuberances different from the ordinary rose-coloured protuberances daily visible under the spectroscopic, it is announced that the Minister of Public Instruction will send Prof. Tacchini and Prof. Riccò to observe the August eclipse in Siberia for the express purpose of studying these new manifestations.—On the origin of the variations of intensity in the dry pile, and on the means of preventing them, by Prof. Luigi Palmieri. The author's experiments lead to the conclusion that the dry pile is not only the most durable, but also the most constant, and that the variations of intensity are due to dispersions. These dispersions are independent of the moisture and temperature of the surrounding atmosphere, at least within certain limits, while the pile enveloped in a volume of air will preserve its force almost unaltered for years, and not only not diminished, but even slightly increased, by the atmospheric moisture.

March.—A new method of measuring the specific weights of fluids, by Dr. Alessandro Sandrucci. A new method is described,

for which a single apparatus alone is needed, and for which the author proposes the name of areovolumeter, combining as it does the functions of the areometer and volumeter. Although somewhat less accurate than Marangoni's recently invented double volumeter, this process reduces the disturbing influence of superficial tension to a minimum, while completely dispensing with the empirical scales on the volumeters, the determination of which involves considerable difficulty.

Bulletin de l'Académie Royale de Belgique, February.—Determination of the direction and velocity of the movement of the solar system in space, by M. P. Ubahghs. For the direction, the same method is adopted as that already known through the labours of M. Folie. For the velocity, use is made of three groups of stars of the second, third, and fourth magnitudes, the first group belonging probably to the solar nebula itself. The resulting velocity is only 16,500,000 kilometres for the year as compared with the 850,000,000 obtained by Homann working on the spectroscopic observations of Greenwich.—On the influence of diurnal nutation on the questions connected with the observations of γ Draconis made at the Observatory of Greenwich, by L. Niesten. By employing M. Folie's formula of diurnal nutation the author has determined a source of error long suspected in the calculations of Main and Downing. By introducing the necessary correction he arrives for the first time at a positive parallax for γ Draconis. He thus also, for the first time, determines beyond all doubt the real existence of diurnal nutation.—On the two tetrabromureted hydrocamphenes, by W. De la Royère. It is shown that by the action of the chlorobromide of phosphorus on camphor there are produced two tetrabromureted hydrocamphenes differing in their physical properties, specific weights, points of fusion, and molecular rotatory power. By subjecting them to the action of the nitrate of silver, heat, and chlorine, the author transforms the two isomers into one and the same tribromureted camphene; while metallic silver reduces them to an identical bibromureted camphene, chlorine producing a bichlorureted and tetrabromureted hydrocamphene also identical for both.

Rendiconti del Reale Istituto Lombardo, February.—State of education in Italy, by Prof. A. Amati. The results of the recent official returns are given in tabulated form for the 284 circuits of the kingdom, showing in separate columns the percentage of "analfabeti" (illiterate) in each communal district and its chief town. The general result appears to be more unsatisfactory than had been anticipated, the disparity especially between the towns and rural districts being still excessive, even in Piedmont, Liguria, and some of the other best regulated departments.—Measurement of the muscular force in man, by Prof. G. Zoja. A brief account is given of the various instruments devised for determining scientifically the degree of muscular force in individuals, according to sex, age, and other conditions, from Regnier's dynamometer to the present time. The author also proposes a scheme of classification based on the degree of muscular energy possessed by the individual, and ranging from a given mean (Mesostheni) upwards and downwards through the Megastheni and Microstheni to the two extremes of Heraclestheni and Astheni.

March.—Observations on the luminous solar rays, by Giovanni Cantoni. The attention of meteorologists is called to the lucimeter recently constructed at Milan, which is stated to give more satisfactory results than the English heliograph with glass sphere or Craveri's chemical photometer. It determines with great accuracy the relative measure of the luminous rays at all hours of the day in relation to the altitude of the sun above the horizon of the place of observation. It also gives the integral of the successive and varying luminous influences of the sun during the course of a whole day. With regard to the instrument described by Clark in NATURE (vol. xxxii. p. 233) for measuring the radiant energy of the sun, its principle is stated to be based not so much on Wollaston, as on the discovery made many years ago by Bellani, and for some time applied by the author to agricultural meteorology.—Meteorological observations made at the Brera Observatory, Milan, for the month of February.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 21.—"Some Applications of Dynamical Principles to Physical Phenomena. Part II." By J. J. Thomson, M.A., F.R.S., Fellow of Trinity College and