vol. 12, No. 3) introduces facts which cannot be explained on the ordinary Mendelian basis. The sweet pea Duke of Westminster sometimes has on the wings a larger or smaller patch of purplish pink. Such patched plants give normal, red, and patched offspring in varying proportions. Certain branches of "patched" plants are sometimes normal. The seeds from such normal branches show no constant genetic difference from the rest of the plant, nor was any evidence obtained that the normal, patched, and red flowers on a patched plant differed from one another genetically. There is no indication of genetic differentiation in the germplasm of different parts of the plant. Nevertheless, patched plants are not apparently all alike. As in striped Mirabilis, the pair of colour characters may behave either as a segregating Mendelian pair or form a mosaic. There is no sufficient explanation of this mosaic condition at the present time, but it represents a condition differing distinctly from ordinary Mendelian behaviour.

In a second paper on the inheritance of characters in some of the many rice varieties, Mr. F. R. Parnell, with the assistance of Messrs. G. N. R. Ayyanger, K. Ramiah and C. R. S. Ayyangar (Mem. Dept. Agr. India, Botany, vol. xi. No. 8), deals with the colours of glumes and grain, also with dwarfing and with shape of grain. The dwarf variety differs very markedly from the type, but behaves as a simple recessive. A result of economic importance is that the weight of the grain varies with the shape. The hereditary behaviour of a number of colour factors is analysed. Another genetic paper of economic value is a study of certain forms of cotton by Mr. Ram Prasad (Agric. Inst. Pusa. Bull. No. 137). Long fibre is considered to be a dominant character in cotton. Some evidence is obtained that long fibre is correlated with long stigma, plants with short lint having shorter styles. If this is the case it would enable roguing of undesirable plants producing short lint to take place much earlier than would otherwise be possible.

Norway and Iceland: An Interesting Contrast.

NORWAY has many interesting features to a visitor with scientific and technical tastes. The ubiquity of electricity generated from water-power has often been the subject of comment. The peculiar formation of the high tablelands, with lakes at heights of 1000-3000 feet, constantly renewed by water from the snows above, is favourable to hydro-electric supply. The potential value of the water-power of Norway has been assessed at 15,000,000 h.p., of which about one million is at present in use.

The mountainous nature of the country has other interesting consequences. One curious result is that communication between valleys is often less easy in summer than in winter, when roads and passes become covered with deep snow and can be traversed by ski and sleigh. The nature of the country has developed isolated scattered communities with pastoral tastes and special local industries, such as the hand-woven fabrics for which Norway is famous.

The climate has much in common with that of England. Bergen is notorious for its rainfall, and the humid atmosphere is doubtless responsible for the luxuriant growth of trees, springing in masses out of the bare rock lining the fiords in a manner that seems to invite study by experts in forestry. The use of timber in Norway is universal. Buildings are almost invariably of wood, and the humbler cottages are roofed with turf, which seems to thrive in the moist atmosphere. In mountainous Norway grass is scarce. Hence the custom of sending cattle up to the mountain "sæters" in the summer, so that the grass at the level of the fiord can be stored in summer-time. This cut grass is hung up to dry on horizontal lengths of wire. Possibly British farmers could take a hint from this practice, as crops in this country are often spoiled by rain.

Geologically the great tablelands of Norway, with their stretches of perpetual snow at relatively low level, and their vast glaciers (the largest in Europe with the exception of those in Iceland) are of great interest. It is a strange sight to find these great glaciers descending right down to the level of the fiord, as happens, for example, at Fjaerland.

Iceland furnishes some interesting contrasts to Norway. The climate is more stable and less like that of Britain. Whereas in Norway trees are everywhere, in Iceland there are practically none. Hence we find a new material for buildings of the better class—corrugated iron! Grass is also scarce, and Iceland is one of the few countries where rabbits will not thrive. The scenery, though almost destitute of verdure, is not monotonous and has a charm of its own. It consists mainly of alternations of rock, lava, and sand, with, on the lower slopes of mountains, stretches of moss. All vary remarkably in colour. Rocks are black, brown, purple, and occasionally bright red. Sand may have any tint from yellow to black. Amazing changes in colour, difficult to explain and offering an interesting study to the physicist, occur as the sun sets. A curious feature is the astonishing brilliancy of the setting sun, exceeding by far that usual in England. The pools of molten lava also afford a field for study. Their position is indicated by a sulphur-yellow crust, but the upper liquid contents are often bright blue, changing to scarlet at a lower level. Hecla, by the way, although the mountain best known to English readers, is by no means the best example of volcanic action, and is a comparatively inconspicuous mountain.

Ice and snow, usually not far distant in Norway, are universal on the higher mountains of Iceland, and the blanket of ice and snow creeping over the edges of precipices forms an important element in the general scheme of coloration.

In one respect Iceland and Norway seem to be much alike—in the hospitality accorded to the English visitor. In Norway, especially when one leaves the beaten track, one is conscious of an atmosphere very different from that in many hotels in Europe. In Iceland, once he leaves the capital, the traveller finds practically no hotels, but he can rely on the generous hospitality of the districts visited. Ponies are the usual mode of conveyance. It is stated that the import of horses is forbidden, as the Icelandic Government desires to keep the strain of ponies pure.

In Norway the present writer was impressed by the high general level of education. One could converse on equal terms with persons of all degrees, and learn facts of interest about the country. English is a compulsory language in the schools, and is often spoken with considerable facility. Even in Iceland, it appears, English is spoken more frequently than might be expected. Here again there is a high level of education, but owing to the remoteness of the island some strange conceptions of England prevail.

In Iceland, as in Norway, a variant of Danish is

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spoken. But whereas in Norway the entrance of foreign words is not resented, in Iceland they invariably undergo translation before acceptance. The writer was given to understand that the language is written and spoken in almost exactly the same manner as it was a thousand years ago, and that the ancient sagas can be read with the same ease as the modern newspaper. Probably there is no other country in Europe where this strange perpetuation of ancient forms of speech prevails.

The Survey of India.

THE report by Col. Ryder, the present Surveyor-General of India, referred to below,[1] shows that in the year 1919–20 the Indian Survey Department had fully recovered from the dislocation due to the War.

During this period there were no less than 19 survey parties in the field, of which 12 were topographical. On the normal scale of one inch per mile (much of which was revision) and smaller geographical scales, about 2800 square miles was turned out, while on the larger scales, ranging from 1½ inches to 24 inches and even 64 inches (city and town surveys), the output, detailed partly in miles and partly in acres, was reckoned to be satisfactory. Every class of country was included in the field of work, from the sands of Rajputana to the dense forest-covered hill tracts of Burma, and we read of the time-old difficulties, heavy and continuous rain, malaria, and even of the clearance of villages by man-eating tigers. It is interesting to observe that the sources of the Irawadi (so long a geographical problem) were finally mapped.

Although the costs of the different classes and scales of survey are set out in considerable detail, it is difficult to frame any conclusion as to whether those costs have risen since the War. The normal one-inch scale of original survey apparently varied between 20 Rs. per square mile in Bengal and 70 Rs. in Lower Burma. This does not indicate any great increase on pre-war costs, but in itself scarcely justifies any general estimate.

In the geodesic and scientific branch of the department there is a curtailment of activity. No first-class triangulation was carried out, and both the pendulum and latitude observations were suspended, but the registrations of tidal curves by means of self-registering tide-gauges were continued at Aden and at the principal ports of India. Levelling operations were also continued, and a new geodesic level net of India has been inaugurated on which levelling of high precision on the "fore and back" system will be the method employed. Like the exact determination of the height of the principal peaks of the Himalaya, it might be open to question whether the practical results of extreme precision are worth the expense of determination. The magnetic survey was also carried on during this season. The report closes with the usual returns of the computing- and drawing-offices.

The chief point of interest in the volume is found in Appendix II.—the report on the expedition to Kamet by Major Morshead, who afterwards took such an active part in the Everest expedition. Kamet (25,445 feet high) is the culminating peak of the Zaskar range, and afforded Major Morshead and that distinguished mountaineer, Dr. Kellas, an excellent opportunity for scientific observation on the effect of high altitudes on the human body. Appendix III. is also interesting, recording a note on the topography of the Nun Kun massif in Ladakh by Major Kenneth Mason. He has a good deal to say in criticism of Mrs. Bullock Workman's claim to have established the height and position of certain peaks of that group, in which she disagrees with Indian Survey results. It is always dangerous for the amateur to claim greater accuracy than that maintained by the Trigonometrical Survey of India. Mrs. Bullock Workman, in publishing her account of her extraordinary feats of climbing, pits herself against the G.T.S. and suffers accordingly.

T. H. H.

[1] Records of the Survey of India: Annual report of Parties and Offices for 1919–20, vol. 15.

Polish Celebrations of the 450th Anniversary of the Birth of Copernicus.

NICOLAUS COPERNICUS was born on February 19, 1473, in Toruń (Thorn), a town situated on the Vistula, in the north-west of Poland; the 450th anniversary of the birthday of the great astronomer occurred thus on Monday, February 19, and was celebrated in many parts of Poland with much solemnity. Impressive ceremonies were held in Warsaw, Wilno, Poznań, Lódź, Wloclawek, and Kieke; in the Jagellonian University of Cracow (where for four years, 1491–1495, Copernicus was an undergraduate) the celebrations in commemoration of the anniversary will be held at a later date, probably in May.

In connexion with the Cracow proceedings a work, "Stromata Copernicana," will be published under the auspices of the Polish Academy of Sciences and Letters in Cracow; its author is Prof. L. Birkenmajer, the well-known biographer of Copernicus. We have not the space to enter into an account of Prof. Birkenmajer's investigations, but the following interesting fact may be mentioned: On the October page for the year 1505 of the book "Calendarium Magistri Joannis de Monte Regio," preserved in the Uppsala University Library (sign. "Incunab." 840), Prof. Birkenmajer discovered, in Copernicus's well-known handwriting, the Polish inscription (twice repeated) "Bok pomagay" (Our Lord, help us). Writing on this interesting detail, Prof. Jan Łoś, the well-known philologist (and professor of the history of Polish language in the Jagellonian University of Cracow), says: "In the year 1505 every Pole would have written the words given above exactly in the form in which Copernicus has written them" (*Jezyk Polski*, vol. viii., No. 1). Prof. Birkenmajer adds that in 1505, or perhaps in 1506, Copernicus had already in his mind the ideas which eventually took form in the well-known revolutionary "Commentariolus."

The Copernicus commemoration at Toruń extended over the two days—February 18 and 19; delegates from all the universities, high schools, scientific societies, etc., of Poland, and other guests were cordially received by the municipality and citizens of Toruń. The proceedings included the inauguration of the first general meeting of the Polish Astronomical Society. This meeting resolved unanimously to ask the Polish nation to establish a National Astronomical Institute in Poland; an attempt with this object in view was made by Prof. Banachiewicz, of the Jagellonian University of Cracow, and exists in the form of an astronomical station in the Carpathian Mountains. A memorial tablet on the house where Copernicus was born was also unveiled.

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