

Artocarpus incisa (nat. ord. *Artocarpaceae*). The tree attains a moderate height, has very large, acutely lobed, glossy leaves, the male flowers in spikes, and the female flowers in a dense head, which by consolidation of their fleshy carpels and receptacles form the fruit. The fruit is globular in shape, about the size of a melon, with a tuberculated or (in some varieties) nearly smooth surface. Many varieties of the tree are cultivated, the fruits of some ripening numerous seeds, which are eaten as chestnuts; but in the best kinds the seeds are aborted, and it is only these that are highly prized as vegetables. The tree is a native of the South Sea Islands, where its fruit occupies the important position that is held by cereals in temperate latitudes. The fruit, which on distinct varieties ripens at different periods, affording a nearly constant supply throughout the year, is gathered for use just before it ripens, when it is found to be gorged with starchy matter, to which its esculent value is due. It may be cooked and prepared for use in a great variety of ways, the common practice in the South Sea Islands being to bake it entire in hot embers, and scoop out the interior, which when properly cooked should have a soft smooth consistence, fibrous only towards the heart, with a taste which has been compared to that of boiled potatoes and sweet milk. Of this fruit Mr A. R. Wallace, in his *Malay Archipelago*, says,—"With meat and gravy it is a vegetable superior to anything I know either in temperate or tropical countries. With sugar, milk, butter, or treacle it is a delicious pudding, having a very slight and delicate but characteristic flavour, which, like that of good bread and potatoes, one never gets tired of." In the Pacific Islands the fruit is preserved for use by storing in pits, where the fruits ferment and resolve themselves into a mass similar in consistency to new cheese, in which state they emit an offensive odour; but after baking under hot stones they yield a pleasant and nutritious food. Another and more common method of preserving the fruit for use consists in cutting it into thin slices, which are dried in the sun. From such dried slices a flour may be prepared which is useful for the preparation of puddings, bread, and biscuits, or the slices may be baked and eaten without grinding. The tree yields other products of economic value, such as native cloth from the fibrous inner bark of young trees; the wood is used for canoes and articles of furniture; and a kind of glue and caulking material are obtained from the viscid milky juice which exudes from incisions made in the stem.

The bread-fruit is now found throughout the tropical regions of both hemispheres, and its first introduction into the West Indies is connected with the famous mutiny of the "Bounty," and the remarkable history of a small company of the mutineers at Pitcairn Island. Attention was directed to the fruit in 1688 by Captain Dampier, and later by Captain Cook, who recommended its transplantation to the West Indian colonies. In 1787 the "Bounty" was fitted out under command of Lieutenant Bligh to proceed to Tahiti to carry plants thence to the West Indian Islands; and it was after the cargo had been secured and the vessel was on her way that the mutiny broke out, and Lieutenant Bligh and some of his crew were turned adrift in a small boat in the open sea. The mutineers returned with the vessel to Tahiti, whence a number of them, with a few native men and women, sailed to the desolate and lone islet of Pitcairn. Lieutenant Bligh ultimately reached England, and was again commissioned to undertake the work of transplanting the plants, which in the year 1792-3 he successfully accomplished.

A somewhat similar but much inferior fruit is produced by an allied species, the Jack or Jak, *Artocarpus integrifolia*, growing in South India, Ceylon, and the Eastern Archipelago. This tree is chiefly valuable on account of

its timber, which has a grain very similar to mahogany, and although at first light coloured it gradually assumes much of the appearance of that wood.

BREAKWATERS differ from piers in their not being necessarily adapted for commercial purposes. They do not, therefore, require to have roadways for the accommodation of traffic, or parapets for keeping water or spray from passing over them. Breakwaters are artificial structures consisting generally of stones or blocks of concrete, built or deposited in deep water. Their object is to tranquillize those portions of the sea which they cover, and which thus become sheltered anchorages. They may be divided into three classes:—(1.) Vertical or nearly vertical structures of built masonry for arresting the onshore progress of the waves, and for either reflecting them seawards or deflecting them laterally. (2.) Sloping structures of rubble stones dropped into the sea from timber stages or floating barges, and hence termed *pierres perdues*, having a sloping face on each side, termed a *talus* or *glacis*. These slopes, which, after the blocks have been consolidated, are generally protected above low water by stones set closely together, called *pitching*, are the angles of repose assumed by the loose blocks under the influence of the waves, and vary in steepness from above high water to below low water, where the force of waves is least. They vary from about 1 foot horizontal to 1 foot vertical to 7 feet horizontal to 1 foot vertical. (3.) What may be termed composite breakwaters are partly sloping and partly vertical, and act by causing the waves to break, and also by partially reflecting them seawards or deflecting them laterally. The new breakwater at Aberdeen and the Dover Admiralty pier, which acts also as a breakwater, are examples of the *first* class. Plymouth breakwater, which rises with a general sea-slope of from 2 to 5 horizontal to 1 vertical to a height of 23 feet above high water, is an example of the *second* class. Cherbourg, which slopes from low water to high water, above which level there is a vertical barrier rising to 12½ feet above high water, is an example of the *third* class. Breakwaters, though passive, are nevertheless real agents by which work is done in combating the waves in one or other of the three modes which have been defined. For further information regarding the design of breakwaters and the details of their construction see HARBOURS.

BRECHIN, a parliamentary burgh of Scotland in the county of Forfar, 7½ miles W. of Montrose, and connected by a branch-line with the Caledonian Railway. It is situated on an abrupt declivity on the north bank of the River South Esk, here crossed by a stone bridge of very early date. The principal buildings comprise the parish church (with steeple and spire 128 feet high)—forming part of an ancient and uncompleted cathedral, of Gothic architecture, which has been injured by modern alterations, several other churches, a town-house, the public and Smith's school, a mechanics' institute, and an infirmary. The diocesan library hall of the Episcopal church contains an extensive and valuable collection of books, many of them presented by Bishop Abernethy-Drummond, and about 2000 by the late Bishop Forbes, who erected the building. Some ruins remain in the "vennel" of the Maison Dieu, or *hospitium*, founded by William of Brechin in 1256. The most remarkable edifice, however, is the round tower, situated in the churchyard near the cathedral. This tower is similar to those so common in Ireland, but in Scotland is only rivalled by the tower at Abernethy. Like similar buildings, it contains no stair, and the only access to the top is by means of ladders placed on wooden floors, which rest on circular stone projections within the tower. The height from the ground to the roof is 86½ feet, the inner diameter within a few feet of the bottom is 8 feet, and the thickness of the wall at that part about 4 feet; the circum-

ference is very near 50 feet; the inner diameter at top is 6 feet 7 inches, the thickness of the wall 2 feet 10 inches, and the circumference 38 feet 8 inches. These proportions give the building a high degree of elegance. The top is roofed with an octagonal spire 18 feet high, which makes the whole height of the building 101 feet 9 inches. Brechin Castle, which was a place of some strength during the Wars of the Independence, now a seat of Lord Dalhousie, lies a little to the south of the town. There is a public park near the town, and two large nurseries. There are three extensive power-loom linen factories (one of them a building of much taste), two bleach-fields, two distilleries, a brewery, and a paper-work; and extensive freestone quarries exist in the neighbourhood. The town is lighted with gas, and an ample supply of water has been introduced at great expense. Weekly markets are held on Tuesdays; and statutory fairs for horses, cattle, and sheep are held at Trinity Muir, about a mile north of the town. Brechin unites with Montrose, Arbroath, Forfar, and Bervie in returning one member to parliament. The population of the parliamentary burgh was in 1871, 7959, and of the royal burgh, 5083.

Brechin is a place of great antiquity, and was chosen by the Culdees as the site of one of their convents. It is said to have been burned by the Danes in 1012. In 1150 it was erected into a bishopric by David I. In 1572 James VI. gave a grant for founding a hospital in the burgh, which still supplies the magistrates with funds for charity. In 1645 the town and castle were harried by the marquis of Montrose. Maitland the topographer and Gillies the historian of Greece were natives of Brechin.

BRECON, or BRECKNOCKSHIRE, an inland county in South Wales. Its greatest length from south to north is about 53 miles, and its greatest breadth from east to west about 46 miles. It possesses an area of 719 square miles, or 460,158 acres, and is thus the fourth largest county in Wales. It is said to have derived its name from Brychan, a Welsh prince, who flourished in the fifth century.

The Old Red Sandstone is the principal geological formation in this county, and occupies the whole of the central portion from east to west. Along the southern boundary there extends a narrow belt of carboniferous limestone, millstone grit ("farewell rock" of the miners), and the outcrop of the coal beds,—together forming the northern rim of the coal measures in the great South Wales coal-field. At Clydach in Llanelly, Brynmawr, Hirwaun, and a few other places on the south-eastern border of the county, there are extensive iron-works. The narrow projecting part of the county to the north, lying between Radnor and Cardigan, is occupied by the Upper and Lower Silurian beds; and there is a somewhat singular narrow peninsula of the former projecting into the Red Sandstone for a distance of ten miles, in a S.W. direction, and terminating at about five miles north of the town of Brecon. A belt of limestone extends from the town of Hay on the east, and passing in a S.W. direction through the town of Brecon, terminates at the Brecknockshire Van. A prominent band extends along the border of the Old Red Sandstone on the N.W., where it joins the Silurian beds.

The general aspect of the county is mountainous, and the scenery is marked by beauty and grandeur. A chain of the loftiest mountains in South Wales completely encircles the south, composed in the east of the Black Mountains, 2545 feet in height, and the curious Sugar Loaf rising to the height of 1760 feet. On the west of Brecknockshire are the Van and Talsarn mountains 2596 feet, and Mount Capellante 2394 feet in height; while the centre of the crescent is occupied by the masses of the Brecknockshire Beacons, the highest point of which, Cader Arthur, or Arthur's Chair, attains an altitude of 2910 feet. In the north, a range of barren hills, called Mynydd Bwlch Groes at the most westerly end and Mynydd Epynt

towards the east, enters the boundary of the county at a short distance from Llandovery in Carmarthenshire, and extending in a N.E. direction, terminates near Builth.

Of the valleys the most distinguished for beauty is that of the Usk, stretching from east to west, and dividing the county into two nearly equal portions. The Wye is the chief river, and forms the boundary on the N. and N.E. from Rhayader to Hay, a distance of upwards of twenty miles; while the Towy, the Afon Claerwen, and the Elan separate the county from Cardigan and Radnor on the N.W. and N. The Usk rises in the Carmarthenshire Van on the west, and flowing in a direction nearly due east through the centre of the county, collects the waters from the range of the Beacons in the south, and from Mynydd Bwlch Groes and Mynydd Epynt in the north, by means of numerous smaller streams (of which the Tarell and the Honddu are the most important), and enters the county of Monmouth near Abergavenny. The Taff, the Hepstau, and the Tawe, all rise on the south of the Beacon range, and passing through Glamorganshire, flow into the British Channel.

Llyn Safaddu, Llangorse Lake, or Breckinioc Mere, the largest lake in South Wales, is situated at the foot of the Black Mountains, and within the county. It covers an extent of nearly 1800 acres, and is about two miles long by one mile broad. Upon an artificial island in the lake traces of habitations raised on piles have lately been discovered, together with the bones of red deer, wild boar, and *Bos longifrons*. Tradition affirms that beneath the lake is a submerged town, which has been rashly identified with the Roman station *Loventium*.

The climate is moist, but temperate and salubrious; and the soil of the valleys, often consisting of rich alluvial deposits, is very fertile. The cultivated crops consist of wheat, oats, barley, rye, turnips, pease, potatoes, and vetches; of these the greater part is consumed within the county. The uplands are chiefly in pasture, and are stocked with sheep, cattle, and ponies, which with wool, butter, and oak-bark, form the staple of a considerable trade with the adjoining English counties, and with the iron districts lying to the south. The farms are generally small, but are well cultivated in the lower parts of the county. The highland occupiers are a very humble, hard-working class of men. It is calculated that about two-thirds of the lands in the county are enclosed.

Breconshire is intersected by the Mid Wales, Brecon, and Merthyr Railway, and a branch of the London and North-Western, by means of which there is ready communication with all parts of the kingdom.

The principal towns are Brecon, Builth, Crickhowel, and Hay. The county returns one member to parliament, and has done so since 1536. The political influence is chiefly in the hands of Lord Tredegar and Sir Joseph Bailey. Constituency in 1875, 3574. Rents in the valley of the Usk and around Brecon are high, but on the mountain lands very low; it would be deceptive to give an average per acre. The annual value of real property paying income-tax is £316,208. The population of the county by the last census was 59,901, giving an average of 83 persons to a square mile, or 7.68 acres to each person. Of the total number 29,928 were males, and 29,973 females. The number of inhabited houses was 12,617, giving an average of 17.5 inhabited houses to a square mile, and 4.7 persons to each house. The following returns show an increase of population amounting to 34 per cent. during the last fifty years:—

1821.....	43,826
1831.....	47,763
1841.....	55,603
1851.....	61,474
1861.....	61,627
1871.....	59,901

The Welsh language is still that of the peasantry and middle class, and the members of the Church of England are largely out-numbered by the Bepstists, Calvinistic Methodists, and Independents.

Brecknockshire formed part of the territory of the Silures, and its occupation by the Romans could never have been very complete. After their expulsion the district (*Brycheiniog*) was ruled by native princes and was the scene of many a border struggle. Many of the castles which are scattered over its eastern border had their origin at this period; and some of them may be regarded as advanced posts erected by the English during the wars which preceded the formation of Offa's Dyke. Subsequently, when Bernard de Newmarch and his Norman followers obtained possession of the country, they were converted into regular fortresses, by which the neighbourhood was kept in awe, and the mountain passes defended. The district between Brecon and Builth was the scene of the last struggle between the English and Llewelyn in 1282, when the Welsh chieftain was defeated and slain. Since that date Brecknockshire has not been associated with any important historical events, unless we include among them the raids of Owen Glyndwr. It formed part of the Welsh Marches until their union with England in 1532. Among the eminent natives of the county may be mentioned Sir David Gam (Shakespeare's Fluellen), who lost his life at Agincourt while defending Henry V.; the ill-fated Henry Stafford, duke of Buckingham; John Penry ("Martin Marprelate"); Henry Vaughan, the poet; Dr Hugh Price, founder of Jesus College, Oxford; Thomas Howel, bishop of Bristol (less known than his brother, the letter writer); Théo. Jones, historian of the county; and Mrs Siddons.

BRECON, or BRECKNOCK, the capital of the county of the same name, a market and borough town, 145 miles N. by W. from London, picturesquely situated in a fine open valley, at the confluence of the Honddu and Tarell with the Usk, and nearly in the centre of the county. It is supposed to occupy the site of the Roman station *Bannium*, but it is more probable that it was partly constructed with materials drawn from that spot, which lies to the W. of the present town, on the Via Julia Montana. There are three main streets, with several smaller ones. The houses are for the most part constructed of stone, and are generally well built. Brecon has a fine cruciform church (Early English in style), which has been restored by Sir Gilbert Scott. There are two other churches, and two Independent, two Baptist, and one Calvinistic Methodist chapel. The corporation consists of a mayor, recorder, four aldermen, and twelve councillors. The borough has returned one member to parliament since 1536. Constituency in 1875, 813. The assessed taxes yield annually £1259, and the annual value of real property paying income-tax is £24,941. There are weekly markets, and several fairs in the course of the year. The quarter sessions and assizes are held here. Brecon has a foundation called the College of Christ Church, of which the bishop of St David's is *ex officio* dean, but after the death of its present officers its revenues will devolve to the ecclesiastical commissioners and be appropriated to ecclesiastical uses. The ruins of the ancient castle are enclosed in the beautiful grounds of the Castle Hotel, and though unimportant in themselves, derive an interest from their connection with the Fitzwalters, de Braoses, de Bohuns, and Staffords, successive lords of Brecon. The principal fragment now remaining is Ely Tower, so called from its having formed the prison of Morton, bishop of Ely, where he concerted with his custodian, Henry Stafford, duke of Buckingham, the dethronement of Richard III., and the union of the houses of York and Lancaster. There are some fine

Roman and other remains in the immediate vicinity. Population of municipality in 1871, 5845; inhabited houses, 1172.

BREDA, a town of Holland in the province of North Brabant, and capital of a circle, is situated in a marshy plain on the Merck, 24 miles S.W. of Bois-le-Duc, and 30 N.N.E. of Antwerp. It is strongly fortified and defended by a citadel (rebuilt by William III. of England), and the surrounding district may be laid under water when required. The town is well built, with wide and well-paved streets, is intersected by several canals, and has a fine quay, a town-hall, an arsenal, an observatory, an orphan asylum, a cathedral, and several Roman Catholic and Protestant churches, one of the latter having a spire 362 feet in height. It has also a Latin school and a military academy, and manufactures of linen and woollen goods, carpets, hats, beer, and musical instruments. Population (1869), 14,172.

Breda obtained municipal rights in 1252 from Henry, but was not surrounded with walls till 1534. The old castle, which had been built in 1350 by Jan Van Polanen, was restored about the same time. In 1696 William Prince of Orange and king of England caused the erection of the new castle, which was regarded as one of the finest buildings of the period. It was afterwards the residence of Charles II. in his exile, and is now the seat of the military academy. The town was captured by the Spaniards in 1581, by Maurice of Orange in 1590; again by the Spaniards, under Spinola, in 1625; and by Henry of Orange in 1637. It was finally ceded to Holland by the treaty of Westphalia in 1648. During the wars of the French Revolution it was taken by Dumouriez in 1793, and again by Pichegru in 1795. Much of its celebrity is due to the various political congresses of which it has been the scene. In 1566 the nobles of the Netherlands formed there the league known as the Compromise; in 1575 a conference was held between the ambassadors of Spain and those of the United Provinces; in 1667 a peace was signed between England, Holland, France, and Denmark; and in 1746-7 the representatives of the same powers met in the town to discuss the terms of another treaty.

BREDA, JAN VAN, a Dutch painter, was the son of Alexander Van Breda, an artist of considerable merit, and was born at Antwerp in 1683. He imitated the style of Wouvermans and Breughel with such dexterity, that even connoisseurs are often unable to distinguish his copies of their pictures from the originals. He visited England, where he was so well employed, that in a few years he was able to retire to his native country with a competency. The earl of Derwentwater was one of his chief patrons. He died at Antwerp in 1750.

BREDOW, GABRIEL GOTTFRIED, a German historian and professor in the university of Breslau, was born at Berlin in 1773. He is known in England by his *Manual of Ancient History*, which was translated into English in 1827; *Researches on History, Geography, and Chronology*; and his valuable *Historical Tables*, which come down to 1811. This last work was translated into English by Major J. Bell, who continued the tables down to 1820, and produced a popular and very useful work. Bredow died in 1814.

BREEDS AND BREEDING.¹ The word breeds is usually applied to the varieties of domesticated animals only, but since the phenomena presented under cultivation by all classes of organisms are entirely similar in character, and since, moreover, much of our knowledge on the subject has been gained from botany and horticulture, we shall include, under the one term breeds, the varieties of domestic animals and of cultivated plants. The natural and simple definition of breeding would be the art by which breeds are produced. But here the objection arises, that in this definition too much is assumed. It may be argued that our domesticated animals and plants are each

¹ Many of the facts and arguments contained in the present article are taken from Mr Darwin's work, *The Variation of Animals and Plants under Domestication*, 1868, and 2d. ed. 1876; and in most instances it has not been considered necessary to give the references.

identical with a wild prototype either living or extinct, and that man has merely deprived them of liberty and regulated their environment and propagation in the manner most advantageous to each kind. At the present day, when the whole range of biological thought is so largely permeated by the principles of the doctrine of evolution, this objection will probably not be advanced. Yet, when it is remembered that such an authority as Col. Hamilton Smith held the belief that each breed of dog had its wild prototype, it appears necessary to modify the definition above given. Let it be said that the art of breeding consists in changing the conditions of life and regulating the reproduction of animals and plants.

Since a breed is a domestic variety, it implies the existence of a group of individuals marked off from their congeners by the possession of certain characters which are transmitted to their offspring. It is this transmission of peculiarities which is the essential characteristic of a breed; for any collection of domesticated organisms could be divided into groups of individuals distinguished by certain points, but such groups would not necessarily form breeds. It is evident, then, that the law of heredity which asserts that "like begets like" must hold good, or the existence of breeds will be an impossibility. Again, if it were absolutely true that like begets like, that is; if the offspring were in all cases identical with the parent, it is evident that neither by man's interference, nor by the operation of nature, could a breed or race arise. It seems, then, that were it not in the nature of all organic beings to reproduce their kind in the manner formulated in the principle of heredity, and were it not for the continuous slight infringement of it expressed by the principle of variability, breeds could not have arisen. It is therefore necessary to examine these two principles as part of the subject under consideration.

Whatever views we may entertain respecting the origin of our domestic animals and plants, there can be no doubt as to the matter of fact that breeders have always proceeded on one principle,—select the best individuals in each generation and pair them. Now we have found that the qualities of organic beings (forming in a certain sense the material on which the breeder has to work) can be generalized under two principles—heredity and variability. And in the same way the art of breeding is itself capable of a kind of generalization under the principle of selection. There are thus three great principles or laws—heredity, variability, and selection,—the last relating to the art of man, the other two to those qualities of organic beings which render the art practicable.

Heredity.—The simplest form of heredity is found amongst those organisms which reproduce their kind by division into two parts similar to each other. This process is illustrated by the fission of a Monerón. The next advance in complexity of reproduction occurs when the two portions into which the organism divides are dissimilar to one another; here the process by which both portions ultimately assume the form of the parent is not one of simple nutrition, *i.e.*, of formation of tissue like that already formed. The process by which man propagates some of his cultivated plants is one of artificial reproduction by fission. For instance, a cutting or part of a shoot, or even a leaf (as with Begonia), if placed in suitable soil, will reproduce the original plant in all its minute details. We are here face to face with the mystery of reproduction; for we have the ever wonderful fact that in a few cells lies dormant the vital impetus which enables them to produce from inorganic pabulum a most complicated structure, which in its totality is utterly unlike themselves. And this example shows us, moreover, how essentially the same are sexual and asexual reproduction; for there is no intrinsic difference between reproduction from a small part artificially separated

from a simple foliar organ (a leaf) and the same sequence of growth originating in a small portion naturally segregated from a transformed foliar organ (the ovary). The conditions of growth are not the same in the two cases, and there all essential difference ends; for the broad distinction which the congress of two individuals in one case appears to make is swept away by the facts of Parthenogenesis. In the lowest of living things we have seen that growth and reproduction are almost identical aspects of life. And this connection is not less close among higher organisms; as Mr Herbert Spencer observes,—“When in place of its lost claw a lobster puts forth from the same spot a cellular mass, which, while increasing in bulk, assumes the form and structure of the original claw, we can have no hesitation in ascribing this result to a play of forces like that which moulds the materials contained in a piece of Begonia leaf into the shape of a young Begonia. In the one case as in the other the vitalized molecules composing the tissues show their proclivity towards a particular arrangement; and whether such proclivity is exhibited in reproducing the entire form or in completing it when rendered imperfect matters not.” The main fact of inheritance is so obvious that it is apt to be forgotten. Mr Darwin remarks,—“It is hardly possible, within a moderate compass, to impress on those who have not attended to the subject the full conviction of the force of inheritance, which is slowly acquired by rearing animals, by studying the various treatises which have been published on the various domestic animals, and by conversing with breeders.”² Certain peculiarities have appeared only once or twice in the history of the world, but have reappeared in children or grandchildren of the individuals so characterized. Thus Lambert “the porcupine man,” whose skin was covered with warty projections, which were periodically moulted, had all his six children and two grandsons similarly affected. The most striking cases of inheritance have, as in this instance, been observed in man; but the very existence of the numerous breeds of domestic animals is clear evidence of the possibility of the transmission of every kind of peculiarity. For instance, it is believed that the varieties of the domestic pigeon amount to at least 150, and these races differ from each other in many ways, and all breed true to their kind. Some very curious peculiarities have been perpetuated. A race of cattle called “Dutch buttocked” was formed in Yorkshire by selecting in each generation the animals with the largest hinder-quarters. When the breed began to be established it was found that the large size of the calves' hind-quarters increased the dangers of parturition to a considerable extent. This case is interesting as showing that hurtful peculiarities may be inherited just as readily as those which are beneficial, and as bearing witness to the improbability of the view that there is an innate tendency to vary in the right direction. The terrible strength of inheritance exhibited by disease is a fact which is only too well established in the case of man; and in the maladies of domestic animals the same law holds good. It appears that nearly all the diseases to which the horse is subject are hereditary,—for instance, contracted feet, curbs, splints, spavin, founder, and weakness of the fore legs, roaring or broken and thick wind, melanosis, specific ophthalmia, and blindness, and even such habits as crib-biting and jibbing, are all plainly hereditary. The fact that any, even the most complex combinations of qualities are capable of hereditary transmission, is, perhaps, more forcibly brought home by considering the monetary aspect of the art of breeding, than by the fullest collection of special instances. As Mr Herbert Spencer remarks:—“Excluding those inductions

¹ *Principles of Biology*, London, 1863, p. 181.

² *Op. cit.*, vol. ii. p. 4.