

four in Monkton; a number much greater than is required, and certainly not favourable to the moral habits of the people.

Fuel.—The fuel used in the parish is universally coal, which is procured, the best of it, from the collieries in the neighbourhood of Kilmarnock, also from Newton, and from the collieries on the water of Ayr, at an expense, including carriage, of between 5s. and 5s. 9d. per single horse cart.

MISCELLANEOUS OBSERVATIONS.

The most striking change in the parish since the date of last Statistical Account, is in regard to the agriculture, the mode of farming, and the amount of farm produce raised, and of the rental of the parish. At the date of last Statistical Account there was little or no wheat sown; now the annual value of wheat raised is L. 3032, 19s. In 1791 the amount of oats raised in this parish was 1315 bolls, and of bear or barley, 399 bolls; now the annual value of oats raised is L. 2855, and of barley L. 119. In 1791 there were 6 or 7 acres of turnips, and 23 or 24 acres of potatoes; now the annual amount of potatoes and turnips raised is 215 acres, valued at L. 3092. And finally, in 1791, the rental of the parish was supposed to be between L. 1800 and L. 2000; now it is L. 4509, 17s. The chief improvement in the husbandry of the parish is tile-draining in every furrow, or every alternate furrow, which might be applied to a large portion of the parish with the most important results. And the chief error in the system seems to be too frequent white-cropping, as it appears, even under the best management in other respects, to be impairing the productiveness of the soil.

Written in 1832, and revised in 1837.

PARISH OF GALSTON.

PRESBYTERY OF AYR, SYNOD OF GLASGOW AND AYR.

THE REV. ROBERT STIRLING, MINISTER.

L.—TOPOGRAPHY AND NATURAL HISTORY.

Extent and Boundaries.—THE parish of Galston is situated in the district of Kyla. Its greatest length is about 13 miles, and its greatest breadth about 4½; but its figure is very irregular, and

accordingly its superficial extent is found to be scarcely 23 square miles. It is bounded on the east by the river Aven, which divides it from the parish of Avendale; on the north by the Irvine, which separates it from Loudon and Kilmarnock; and on the west by the Cessnock, which divides it from Riccarton and Craigie. Its southern boundaries, by which it is separated from Mauchline and Sorn, are not so easily described.

Geology.—The highest land in the parish is called Distincthorn, about 1100 feet above the level of the sea. This hill, which is near the south-east extremity of Galston, is chiefly composed of old red sandstone, but is found to be frequently intersected with whin dikes.* A quarry has been wrought about a mile and a half to the north of this hill, from which a great quantity of excellent pavement and roofing-slate has been procured; and it has been remarked by the workmen, that the sandstone becomes valuable for these purposes, only where it comes to be nearly in contact with the whinstone, by whose vicinity it appears to have been very much indurated. To the north-west of this, is Molmont Hill (nearly 1000 feet high,) which is formed of trap rocks, such as trap tuff, amygdaloid, porphyry, &c. and still farther to the north and west, are found the usual coal measures belonging to the coal basin of Ayrshire. It has been remarked of the coal mines in Galston, and, indeed, of the Ayrshire coal field in general, that the operations of the miner are frequently interrupted by troubles or whin dikes, which render the working of the coal both expensive and difficult. The general dip of the strata throughout the parish is north-west. The only mineral deserving of notice, as peculiar to this parish, is an ornamental stone commonly known by the name of Galston pebble. It is found at the west end of Molmont Hill, in the channel of the Burn Ann, which runs into the Irvine at Galston, and it is situated in a bed of hard clay of a greenish colour, probably tinged with chrome. There is also found on the top of the last mentioned hill, a vast number of nodules of agate and calcedony, most of them containing quartz crystals in the centre, and very few of them exhibiting beautiful colours.

Soil.—The general character of the soil in the higher and eastern parts of the parish is loamy and sandy, with a considerable tendency in many places to peat; in the lower and western

* There is a considerable number of eminences in this parish, which are covered or capped with whin rocks.

parts, the most prevalent soil consists of different varieties of clay. In the eastern parts, which are generally covered with heath, there are found many trunks of trees of considerable magnitude. One of these was lately dug up from a piece of mossy ground, which appears formerly to have been a small lake about 500 feet above the level of the sea. It proved to be a magnificent oak with a straight trunk, which had once been upwards of 48 feet long, and is still about $3\frac{1}{2}$ feet in diameter at the upper extremity. Two large pieces in good preservation are now kept at Lanfine garden. Whether this tree and its fellows already mentioned, are to be regarded as the remains of the Caledonian Forest mentioned in the Classics, or to be referred to a still more ancient epoch in the history of our globe, must be left for the decision of more competent authorities than the writer of this account.

Along the south bank of the Irvine, there are from 400 to 500 imperial acres of rich *holm* land, which appear evidently to have been formed by successive deposits from the river. It is certain, at least, that the river has at some former period traversed almost every part of this rich tract; and it may be remarked, to the same purpose, that the uniformity of the soil and subsoil throughout its whole extent, as well as the considerable difference of level at the two extremities, preclude the supposition of its having been deposited at the bottom of an ancient lake.

Climate.—The climate of Galston partakes of the general character belonging to that of Ayrshire, being “rather moist but not unhealthy.” From two rain guages kept at Lanfine, it appears that the quantity of rain in 1831, was 53.8 inches, and in 1832, 46.12. It is proper to state, however, that the situation of Lanfine is high, and the fall of rain considerably greater than about the village of Galston.

Bruntwood Loch, with all its winged inhabitants, has disappeared under the grasping hand of modern agriculture, and although Loch Gait does not appear to have suffered from similar encroachments, it must now be described as an insignificant marsh. There is nothing worthy of notice in the zoology or botany of Galston.

II.—CIVIL HISTORY.

Antiquities.—Neither is this parish celebrated by the occurrence of any important event mentioned in history, unless the successful rencontre of the patriot Wallace with the English officer Fenwick is to be regarded in that light. The cairn which is said to mark the locality of this battle, is still in existence in the vicinity

of Loudon Hill, though considerably diminished by the repair of the neighbouring stone-fences. The "rude fortification," however, which is said in the former Statistical Account to have sheltered this hero and his handful of followers, performed the same office to a much more numerous body of warriors, probably not less than 1000 years before. It is evidently a Roman camp, chosen and fortified with all the military science for which that celebrated people were distinguished. Its ramparts, though much reduced by time and the depredations of the husbandman, may be distinctly traced throughout its whole extent, and the Prætorian and Decuman gates are in a state of tolerable preservation. The original camp to which these remarks apply is 180 yards long and 114 broad; but there is another inclosure upon a lower level towards the south, which seems to have been added upon a subsequent occasion, to accommodate a larger force, or perhaps originally designed for the quarters of the allies. This addition lengthens out the parallelogram to 258 yards. It does not appear that there have been any gates at the extremities of the Principia, and, indeed, it is not to be expected from the nature of the ground, which on the right and left sides slopes downwards for twenty or thirty yards, with the declivity of a rampart. Upon one of these slopes there was found in the year 1831, a silver coin in good preservation, having this inscription, CÆSAR AVGVSTVS DIVI F. PATER PATRIÆ. This coin is now in the possession of Thomas Brown, Esq. the proprietor of the estate on which the camp is situated, who is also in possession of another Roman coin, found along with many more, a little to the eastward in the parish of Avendale, and inscribed DIVVS ANTONINVS. These facts and observations taken in connection with the existence of a Roman military way, which may still be traced on the opposite bank of the Irvine, furnish incontestable evidence that the parish of Galston has received at least one visit from the masters of the world; and it furnishes a striking proof of the stupendous scale upon which that wonderful people conducted their affairs, that marches and encampments, too trivial to be recorded in their military histories, have thus certified their own existence during a period of not less than 1600 years.

In connection with these Roman remains may be mentioned another military station on the Galston bank of the Aven, about two miles farther to the south. It is nearly surrounded by the river, and fortified, where it is not so, by a rampart and ditch. Its traditional name in the neighbourhood is Main Castle, which, as

The number of persons of different ages in 1832 was as follows :

Under 15,	1528
Between 15 and 30,	1019
30 and 50,	640
50 and 70,	422
Upwards of 70,	81

At the same period the number of unmarried men and widowers above 50, was	56
unmarried women and widows above 45 was	127
Number of families,	707
chiefly employed in agriculture,	163
in trade, manufactures, or handicraft,	415

The average number of children now residing with their parents, or grandfathers or grandmothers is $3\frac{5}{8}$ for each family where there are any children, and the number of such families is 640.

Of this population about 2300 live in villages, and are chiefly employed in the different branches of the cotton manufacture. A few of the weavers have lately begun to weave different kinds of fancy silk. The high wages which could formerly be earned at weaving and sewing have introduced among this class a taste for an expensive mode of living, which contributes greatly to abridge the real comforts of life, when wages are verging, as at present, towards the lowest ebb. Their condition, therefore, may be now reported as far from comfortable, and the discontent naturally arising from this state of things has been greatly increased by the ignorant or dishonest labours of political agitators, who have taught them to ascribe to oppression and misgovernment, what is chiefly owing to the multiplication of power looms, and other machinery. Whether it be owing to the vain hope of a more adequate remuneration for their present form of labour, or a love of the ease and apparent independence connected with the cotton weaving trade, in which every man is literally his own task-master, the fact is certain, that few have yet left it to engage in the labours of agriculture. The natural consequence is, that the rural labourers are still in the enjoyment of those high wages which the vicinity of manufactures generally produces, and being well fed, and not overworked, their condition is generally comfortable, and they are contented. From this statement, it would be easy to infer the moral and religious character of the population, upon the general principles of human experience. That of the farmers and their servants is, upon the whole, exemplary and good; that of the manufacturers, though it is often excellent, is in too many cases very defective.

The number of illegitimate children during the three years preceding July 1837 was 36.

IV.—INDUSTRY.

The parish of Galston contains 14,577 acres, imperial measure, which may be distributed as follows :

Arable land,	-	9833 acres.
Pasture and moss,	-	3780
Plantations,	-	964

It is probable that 600 acres of the land which has not yet been cultivated might, with a little outlay, be subjected to the operation of the plough. But this could be undertaken with no other view than to improve the quality of the pasture,—a remark which may be applied to nearly 1000 acres of what is above stated as arable. There is no unappropriated common in the parish; but the proprietors of land in Galston, and even in a part of Riccarton, have a right to cut peat and turf in a certain part of Galston Muir. It will readily be believed, however, that in a country where coals are so abundant, and may be purchased at 4s. a ton, exclusive of carriage, this privilege is neither highly valued, nor frequently exercised.

Rent of Land.—The average rent of arable land is 18s. 10d. per acre, and that of moorland pasture 1s. 1d.

Husbandry.—The general duration of leases is nineteen years; but upon the estates of the Duke of Portland many of the farms have lately been put upon the English system, and the tenants have properly no leases, but occupy from year to year. This change does not appear to have been brought about for the purpose of getting rid of the old tenants, or of enhancing their rents; still less has it been introduced to stop the progress of improvement. On the contrary, the farmer being liberally remunerated, in case of removal, for any permanent improvement which he makes upon his farm, carries on his operations with confidence; and the enlightened and wealthy proprietor has lately taken into his own hand the conduct of the most important species of improvement. He has erected works for the manufacture of draining-tiles, and procured persons of experience in the practice of draining; and when any tenant wishes to have his farm improved in this way, he has only to carry the tiles to the field to be drained, and to furnish straw to cover them in cases where it is necessary, and the whole work is performed without any farther expense to him, except the payment of a yearly sum proportioned to the distance at which the drains are placed. This distance varies from 14 to 18 feet, and the yearly sum paid by the farmer varies

in an inverse proportion, from 6s. 6d. to 5s. per acre. It is scarcely necessary to state, that the drains are placed in the furrows, and that, after they have been made, the breadth and position of the ridges is not allowed to be altered. If this improvement had been left to the spontaneous and unaided exertions of the farmers, it would in all probability have gone forward very slowly, owing to the want of capital and enterprize, and still more to the proverbial caution of that class of men. In fact, the *mere example* of a similar system of draining, which had existed in Ayrshire sometime before the commencement of his Grace's operations in Scotland, had been found insufficient to give an impulse to the industry of the farmer. But upon the liberal system above-described, which removes every considerable risk from the tenant to the proprietor, the operation of draining has been found so easy and beneficial, that the tile-works cannot supply the rapidly increasing demand. Nay, such has been the impulse given to agricultural enterprize by the extensive practical evidence of the advantages of thorough draining furnished from the estates of the Duke of Portland in Ayrshire, that tile works are now rising in all quarters, and it is probable that in a very few years these advantages will be shared by the whole county.

Many and great improvements have also been made upon the estate of Lanfine by the late and present proprietor, particularly in the formation of many miles of good roads, in draining and reclaiming waste lands by bounties given to the tenants, and in extensive and judicious plantations. On this estate alone there are now upwards of 800 imperial acres of thriving plantations, which promise to be highly beneficial as well as ornamental to that extensive property. The wood most commonly planted by Mr Brown is larch and other kinds of fir, with a mixture of oak, ash, elm, &c. in places adapted to their growth.

Nothing can be more strikingly at variance than the methods which are followed by the Duke of Portland and Mr Brown in the management of their plantations. The latter puts in the plants at first at distances of not less than a yard every way, and carefully thins them as they advance in size; while the former plants at less than half a yard, and allows no thinning, at least for many years, but what is accomplished by the stronger plants killing the weaker.

“ Non nostrum inter vos tantas componere lites.”

Experience has not yet fully decided, at least in the parish of

Galston, to which of those methods the preference ought to be given. In the meantime, it may be expected that his Grace's system should at length produce the straighter and more useful wood; while it is generally supposed that the protracted struggle for ascendancy among the plants must considerably enfeeble and retard their growth. It is but justice, however, to state, that some oak woods around the old mansion-house of Cessnock, which were planted upon this system about twelve years ago, discover a luxuriance of growth which is very striking, and can scarcely be surpassed in plantations of the same species of tree upon a similar soil, whatever may be the system of management. For the fir tribe his Grace's method does not seem to be so beneficial.

Farm-Buildings.—The state of the farm-buildings in this parish is in general good, and suited to the wants and habits of the farmers; and where it is otherwise there appears to be a rapid advance in the way of improvement. The fences are in many places very indifferent, while in others they have been greatly improved, and even rendered excellent by the practice of frequent scutching or pruning.

Husbandry.—The system of agriculture almost universally followed in Galston is one which, however it may be condemned by the modern school, has at least the praise of being long established, and highly esteemed by those who practise it. It consists in taking two successive white crops, (almost always of oats,) and one crop of rye-grass hay, and allowing the land to lie in pasture during the remaining five years, which complete the rotation. It will readily be inferred from this statement, that the produce of the dairy is the object of primary consideration in this district, and accordingly it may be stated, upon a moderate computation, that at least 210 tons of cheese are annually produced in Galston.

Live-Stock.—The breed of cows found in this parish is that which is commonly known as the Ayrshire breed, on the selection and rearing of which, as well as upon the general management of the dairy, the farmers bestow great attention. The sheep on the few farms where that kind of stock is kept belong to the common black-faced breed.

Produce.—It is impossible to ascertain with absolute correctness the gross amount of raw produce raised in this parish even for a single year, since but few of the farmers are accustomed to keep regular accounts, and some of them are rather averse to communicate the results even when they can. The following state-

ment is founded upon many careful observations and inquiries in different parts of the parish, and though it be only the result of a combination of partial averages, will be found to be pretty near the truth. It certainly does not, upon the whole, exceed the truth.

Average gross produce of grain,	L. 12,210
Cheese and butter,	9,828
Black cattle and sheep sold,	3,100
Hay and straw,	7,751
Potatoes, turnips, &c.	3,340
Of lime,	216
Of coals,	1,148
Thinning and felling of woods,	650
Quarries, orchards, &c.	495
	<hr/>
	L. 38,736

V.—PAROCHIAL ECONOMY.

Market-Town—Means of Communication.—There is no market-town in this parish, the nearest being Kilmarnock, which is five miles distant from the village of Galston. With this town as well as Glasgow, and indeed all parts of the kingdom, the communication is easy by means of excellent turnpike-roads, of which about ten miles fall within the parochial boundaries. The parish roads amount to upwards of twenty miles, and are generally kept in very good order. There are two carriers who go to and return from Glasgow, each twice in a week, and one carrier to Kilmarnock, who goes every lawful day. There is also a daily communication with Ayr, Edinburgh, and all the intervening places, by means of a stage-coach, which passes through the village, and a coach from Glasgow to London by Dumfries passes through another part of the parish. There is a penny-post in the village, and a daily delivery of letters.

Ecclesiastical State.—The parish church is situated in the village of Galston; and as there is here a population of nearly 1900 immediately contiguous to the church, its situation with regard to the general mass of the parishioners cannot be said to be inconvenient. At the same time there are several houses in the eastern part of the parish which are about eight miles distant from the village, and the regularity with which some of their inhabitants attend the parish church, in spite of its distance, must be acknowledged to be highly creditable to their religious character, as well as indicative of their attachment to the national establishment. The present church was built in 1808, on a neat and substantial plan, and is ornamented with a spire and clock. It affords sittings for 1020; of which number, however, there are not more than 250 appropriated to the villagers, the rest being divided amongst the heri-

tors and occupiers of land. About 50 of these sittings are strictly free, and for the remaining 200 a small rent is paid, rather for the purpose of appropriating them to the most regular occupants, than for defraying the expense of erection. The produce, amounting to about L. 10 annually, is thrown into the poor's funds.

The manse was built in 1795, and after undergoing the repairs which generally become necessary in a short time where houses are built by contract, it may now be reported as a good and comfortable house. The glebe contains about $14\frac{1}{2}$ imperial acres, and the productive part of it may be stated at the annual value of L. 18. The stipend consists of the whole teinds of the parish, which amount to 202 bolls, 3 pecks, $3\frac{1}{2}$ lippies of meal; 13 bolls, 1 fir-
lot, 1 peck, $\frac{4}{5}$ lippies of bear, and L. 5, 7s. 9 $\frac{1}{2}$ d. of money, besides L. 1, 11s. 8d., paid by certain lands in the parish of Tarbolton.

There is one Dissenting chapel in the village of Galston, which is occupied by members of the United Secession Church. The minister is supported by the voluntary contributions of his people, and the average amount of stipend is L. 110.

The number of families under the exclusive superintendence of the parochial minister is 573, and the families connected with the different denominations of Dissenters amount to 169. The relative proportions of individuals connected as above is not so easily ascertained, but it may safely be stated to be still higher in favour of the Established Church. The average number of its communicants is 830.

Education.—There are 5 schools within the bounds of this parish,—in four of which the teachers undertake to give instruction in Latin, arithmetic and book-keeping, writing, English reading and grammar. The parish schoolmaster has the maximum salary appointed by Act of Parliament, and provision is made by the heritors for a salary of L. 5, 12s. to two of the other teachers. The fees at all these schools are 2s. 6d. per quarter for English reading, 3s. for writing, 3s. 6d. for arithmetic, and 4s. for Latin; but as the higher branches always include the lower, the greatest sum paid by one pupil for education is 16s. a-year. With such facilities for instruction, it is not surprising that there should be scarcely a single native of the parish who cannot read; but as this has happily been the case for many years, it is impossible now to ascertain the change which may have been produced upon the character of the parishioners by the universal prevalence of educa-

tion. Without doubt this universal capacity of reading, exercised as it is by a public library, containing a considerable number of useful and entertaining books, must have a powerful influence in increasing the enjoyments, and improving the morals of the people.

Yet, notwithstanding the ample provision thus made for the education of youth, the state and prospects of the manufacturing community in Galston have for several years been such as to excite strong apprehensions that the education of their children would for the future be neither so general nor so complete. The wages of the hand-weavers have been so very low as to render it impossible for many of them to pay for the instruction of their children, even at the moderate rate of 10s. a-year. In these circumstances, the inhabitants of Galston have great cause to congratulate themselves, that the late Mr Charles Blair of Longhouse, one of the heritors of the parish, bequeathed the whole of his property, amounting to nearly L. 4000, for the erection and endowment of a free school. It is expressly ordered in Mr Blair's will, that no steps be taken for this purpose, till the free annual rent of his bequest amount to L. 200 a-year; and on this account the parish will not begin to reap the actual benefits of this laudable institution till after the expiration of six or eight years. In the meantime, however, it is proper to state, that a legacy of L. 1000, left by John Brown, Esq. of Waterhaughs, for a similar purpose, has for many years furnished the means of clothing and educating six children from the parish of Galston, and as many from that of Loudon. It is scarcely necessary to add, that these two charitable bequests have been put under the most judicious regulations, and that they promise to produce the most extensive and beneficial effects upon the intellectual and moral state of the community.

Poor and Parochial Funds.—The average number of persons receiving parochial aid for a period of seven years prior to 1832 was 24 annually. The average allowance to each per year is L. 4, 18s. ditto per week, 1s. 10½d. The annual sum expended in their support, L. 117, 4s. 9d.; of which there arose from collections, &c. L. 48, 18s. 9d.; from assessment upon the heritors (alone,) L. 68, 6s. It must be remarked, however, that the number of poor, and the sum expended upon their maintenance, has greatly increased within the two years lately expired, so that the assessment for the poor alone amounted, in 1832, to L. 215. The great mass of the people are sufficiently sensible of the degradation that is inseparable from a state of dependence, and are sufficiently backward

to apply for parochial aid. But there is a pretty numerous class of the manufacturing population who have been taught to found their claims for support not upon the statutes nor the legalized practice of the nation, and still less upon the principles of Christian charity; but upon some vague notions of natural right. It is not surprising that some persons of this class should neither be very solicitous to provide for their own independence, nor very reasonable in their demands when they come to stand in need of relief.

Fairs.—There are annually four fairs in Galston, none of which, however, is of public importance. The most frequented are held on the third Thursday of April, and on the first Thursday of December.

Alehouses.—The number of alehouses or rather of whisky shops is 14,—a number which will be thought by far too great for the population. But little advantage would be gained by the mere diminution of their numbers, if the deleterious fluid which they retail can be procured from the spirit-dealers at its present low price, and consumed as it is at present in the drunkard's own house, and even in the fields.

There are now only four corn-mills and one lint or flax-mill. The paper-mill mentioned in the former report still remains, and two of the others have been converted into saw-mills.

MISCELLANEOUS OBSERVATIONS.

When the present state of the parish of Galston is compared with what it was in 1790, it will certainly be found in many respects to have undergone considerable changes, and, as far as outward appearances are concerned, great improvements. The system of agriculture is indeed nearly the same, and perhaps it is that which is best suited to the soil and climate. But the implements with which the husbandman now labours are far more perfect, and the skill and industry with which he conducts his operations much greater. The hand of taste has also adorned the barren moors with thriving woods and smiling pastures, and rendered the prospect from Molmont Hill fairer and more enchanting than ever. It is in the moral aspect of this parish that any thing like decay or deterioration is to be found. The cotton manufacture, along with wealth and population, has introduced its too frequent attendants, vice and impiety. And although Galston has perhaps less reason to bewail these unhappy changes than many parishes in a similar situation, it must still furnish its quota to the accumulating mass of practical evidence which damps the benevolent aspirations of the

philanthropist, annihilates his utopian visions of earthly perfection, and proves that even the blessings of civilization are always alloyed, and sometimes outweighed, by evils from which it seems to be inseparable.

July 1837.

PARISH OF ARDROSSAN.

PRESBYTERY OF IRVINE, SYNOD OF GLASGOW AND AYR.

THE REV. JOHN BRYCE, MINISTER.

L.—TOPOGRAPHY AND NATURAL HISTORY.

Name.—ARDROSSAN is the only name by which this parish has been ever known. It may be derived from the Celtic words, *Ard*, high, *ros*, a promontory, and *an*, a diminutive, and may signify a highish promontory, which is descriptive enough of the small hill, on which the remains of the Castle of the ancient Barons of Ardrossan still stand.

Situation, Boundaries, &c.—This parish is situated in the district of Cuninghame, the north division of the county of Ayr. It is bounded on the south-west by the Frith of Clyde; on the north-east by Dalry; on the south-east by Stevenston and Kilwinning; and on the north-west by West Kilbride. It extends in length about 6 miles; its greatest breadth is about 4 miles; and it contains, according to Robertson, about 11 square miles.

Topographical Appearances.—The surface is a mixture of hilly and flat country, and almost all of it fit for the plough. From the south-east corner of the parish, for more than a mile, the ground along the shore may be described as an inclined plane of considerable breadth, gently rising towards hills of different heights, which nearly stretch across the whole parish. These hills increase in height towards the north-west, and also approach nearer the shore, where they terminate in steep banks, which bear evident marks of having at one time been washed by the sea. The highest hill in the range is *Knockgeorgan*, which is upwards of 700 feet above the level of the sea; from which, when the atmosphere is favourable, the hills in ten counties may be easily seen. The others are of various elevations, to about 400 feet. Clumps of