

The Chef of the keepers (who judges by the above-mentioned indications) tells me that the ibex not unfrequently arrives at the age of thirty years, and sometimes to forty or forty-five. He says, too, that it is not fond of traversing steep snow, and in descending a couloir that is filled with it, will zig-zag down, by springing from one side to the other, in leaps of fifty feet at a time! Jean Tairraz,* the worthy landlord of the Hotel du Mont Blanc at Aosta (who has had opportunities of observing the animal closely), assures me that at the age of four or five months it can easily clear a height of nine or ten feet at a bound!

Long live the bouquetin! and long may its chase preserve the health of the mountaineering king, Victor-Emmanuel. Long life to the bouquetin! but down with the crétin!

The peculiar form of idiocy which is called Crétinism† is so highly developed in the Valley of Aosta, and the natives are so familiarised with it, that they are almost indignant when the surprised traveller remarks its frequency. One is continually reminded that it is not peculiar to the valley, and that there are crétins elsewhere. It is too true that this terrible scourge is wide-spread throughout the Alps and over the world, and that there are places where the proportion of crétins to population is, or has been, even greater than in the Valley of Aosta; but I have never seen, or heard of, a valley so fertile and so charming, of one which—apart from crétinism—leaves so agreeable an impression upon the wayfarer, where equal numbers are reduced to a condition which any respectable ape might despise.

The whole subject of crétinism is surrounded with difficulty. The number of those who are afflicted by it is unknown; its cure is doubtful; and its origin is mysterious. It has puzzled the most

* Jean Tairraz was the leading guide of the late Albert Smith on his celebrated ascent of Mont Blanc.

† “Crétinism may be looked upon as being the highest stage of Idiocy, although it differs from it, in having a vitiated state of the body, in conjunction with the loss of the faculties of the mind. Thus it is composed of two distinct elements,—the one, Idiocy, the other, bad habit of body.”—Blackie, *On Crétinism*, p. 6.

acute observers, and every general statement in regard to it must be fenced by qualifications.

It is tolerably certain, however, that the centre of its distribution in the valley of Aosta is about the centre of the valley. The city of Aosta itself may be regarded as its head-quarters. It is there, and in the neighbouring towns of Gignod, Villeneuve, St. Vincent, and Verrex, and in the villages and upon the high-road between those places, that these distorted, mindless beings, more like brutes than men, commonly excite one's disgust by their hideous, loathsome, and uncouth appearance, by their obscene gestures, and



A CRÉTIN OF AOSTA.

by their senseless gabbling. The accompanying portrait of one is by no means overdrawn—some are too frightful for representation.

How can we account for this particular intensity towards the middle of the valley? Why is it that crétins become more and more numerous after Ivrea is passed, attain their highest ratio and lowest degradation at or about the chief town of the valley, and then diminish in numbers as its upper termination is approached?

This maximum of intensity

must certainly point to a cause, or to a combination of causes, operating about Aosta, which are less powerful at the two extremities of the valley; and if the reason for it could be determined, the springs of crétinism would be exposed.

The disease would be even more puzzling than it is if it were confined to this single locality, and the inquirer were to find not

merely that it was almost unknown upon the plains to the east and in the districts to the west, but that the valleys radiating north and south from the main valley were practically unaffected by it. For it is a remarkable circumstance, which has attracted the notice of all who have paid attention to crétinism, that the natives of the tributary valleys are almost free from the malady ; —that people of the same race, speaking the same language, breathing the same air, eating the same food, and living the same life, enjoy almost entire immunity from it, while, at the distance of a very few miles, thousands of others are completely in its power.

A parallel case is found, however, on the other side of the Penine Alps. The Rhone valley is almost equally disfigured by crétinism, and in it, too, the extremities of the valley are slightly affected compared with the intermediate districts—particularly those between Brieg and St. Maurice.* This second example strengthens the conviction that the great development of crétinism in the middle of the valley of Aosta is not the result of accidental circumstances.

It was formerly supposed that crétinism arose from the habitual drinking of snow and glacier-water. De Saussure opposed to this conjecture the facts, that the disease was entirely unknown precisely in those places where the inhabitants were most dependent upon these kinds of water, and that it was most common where such was not the case ;—that the high valleys were untainted, while the low ones were infected.† The notion seems to have proceeded from crétins being confounded with persons who were merely goïtred ; or, at least, from the supposition that goïtre was an incipient stage of crétinism.

Goïtre, it is now well ascertained, is induced by the use of

* It was stated a few years ago that one in twenty-five of the natives of the Canton Valais (which is chiefly occupied by the valley of the upper Rhone) were crétins. This would give about 3500 to the canton. At the same time the valley of Aosta contained about 2000 crétins.

† *Voyages dans les Alpes*, § 1033.

chemically impure water, and especially hard water; and the investigations of various observers have discovered that goître has an intimate connection with certain geological formations.* In harmony with these facts, it is found that infants are seldom born with goîtres, but that they develop as the child grows up; that they will sometimes appear and disappear from mere change of locality;† and that it is possible to produce them intentionally.

It is not so certain that the causes which produce goître should be regarded as causes of the production or maintenance of crétinism. It is true that crétins are very generally goitrous, but it is also true that there are tens of thousands of goitrous persons who are entirely free from all traces of crétinism. Not only so, but that there are districts in the Alps, and outside of them (even in our own country), where goître is not rare, but where the crétin is unknown. Still, regarding the evil state of body which leads to goître as being, possibly, in alliance with crétinism, it will not be irrelevant to give the former disease a little more attention before continuing the consideration of the main subject.

In this country the possession of a goître is considered a misfortune rather than otherwise, and individuals who are afflicted with these appendages attempt to conceal their shame. In the Alps it is quite the reverse. In France, Italy, and Switzerland, it is a positive advantage to be goïtred, as it secures exemption from military service. A goître is a thing to be prized, exhibited, preserved—it is worth so much hard cash; and it is an unquestionable fact that the perpetuation of the great goitrous family is assisted by this very circumstance.

When Savoy was annexed to France, the administration took stock of the resources of its new territory, and soon discovered

* Dr. Moffat communicated a paper on this subject at the last (1870) meeting of the British Association at Liverpool, in which he stated he had ascertained that in a Carboniferous district goître was prevalent, and that it was absent on New Red Sandstone.

† Goître is endemic at Briançon, and frequently affects, temporarily, the soldiers who are stationed in that fortress. Chabrand (a doctor of Briançon) says that no less

that, although the acres were many, the conscripts would be few. The government bestirred itself to amend this state of affairs, and after arriving at the conclusion that goître was produced by drinking bad water (and that its production was promoted by sottish and bestial habits), took measures to cleanse the villages, to analyse the waters (in order to point out those which should not be drunk), and to give to children who came to school lozenges containing small doses of iodine. It is said that out of 5000 goïtrous children who were so treated in the course of eight years, 2000 were cured, and the condition of 2000 others was improved; and that the number of cures would have been greater if the parents "had not opposed the care of the government, *in order to preserve the privilege of exemption from military service.*"* These benighted creatures refused the Marshal's bâton and preferred their "wallets of flesh!"†

No wonder that the Préfet for Haute-Savoie proposes that goïtrous persons shall no longer be privileged. Let him go farther, and obtain a decree that all of them capable of bearing arms shall

than one in twenty-five of the men of the 34th regiment of infantry, who were in garrison in 1857, became goïtrous during their stay. This regiment came from Perpignan, where the disease is not common.—*Goître et Crétinisme endémique*, Paris, 1864, p. 56.

* The substance of this paragraph is taken from the *Bullettino del Club Alpino Italiano*, No. 13, 1869.

† Blackie says that "Dr. Mottard mentions the case of a so-called goître well near St. Julien in Maurienne, the water of which encrusted the trees in the vicinity with lime, and the use of which produced goître in a couple of months; and he mentions five young men who had voluntarily drunk its water, and produced goître, in order to be free from military service."

Chabrand, in the pamphlet already quoted, says, "It is deplorable that young people who have a swelling of the thyroïd gland (in the Briançonnais), far from endeavouring to get rid of it, occupy themselves only with making it bigger, in order to escape military service. Especially as the time of drawing for the conscription approaches, do they use every means supposed to be capable of producing goître; drink much water, take 'courses' with burdens" (on their heads?) "and tighten the cravat above the swelling. . . . From 1842 to 1847 inclusive, 91 in 1000 obtained exemption on account of goître in the Department of the High Alps." The same writer places the number of goïtrous persons in France at 450,000, and of crétins at 35,000 to 40,000.

be immediately drafted into the army. Let them be formed into regiments by themselves, brigaded together, and commanded by crétins. Think what *esprit de corps* they would have! Who could stand against them? Who would understand their tactics? He would save his iodine, and would render an act of justice to the non-goîtred population. The subject is worthy of serious attention. If goître is really an ally of crétinism, the sooner it is eradicated the better.*

De Saussure substituted heat and stagnation of air as the cause of crétinism in the place of badness of water. But this was only giving up one unsatisfactory explanation for another equally untenable; and since there are places far hotter and with pernicious atmospheres where the disease is unknown, while, on the other hand, there are situations in which it is common where the heat is not excessive, and which enjoy a freely circulating atmosphere, his assumption may be set aside as insufficient to account for the crétinism of the Valley of Aosta. And in regard to its particular case, it may be questioned whether there is anything more than an imaginary stagnation of air. For my own part, I attribute the oppression which strangers say they feel, in the middle of the valley, not to stagnation of air but to absence of shadow, in consequence of the valley's course being east to west; and believe, that if the force of the wind were observed and estimated according to the methods in common use, it would be found that there is no deficiency of motion in the air throughout the entire year. Several towns and villages, moreover, where crétins are most numerous, are placed at the entrances of valleys and upon elevated slopes, with abundant natural facilities for drainage—free from malaria, which

* "Goîtreous persons, exempt from military service, remain in their native districts, marry, and thus cause the disease to become hereditary. If, on the contrary, they were drawn, and were sent into untainted departments (particularly those upon the sea-coast), they would return perfectly cured at the expiration of their term of service. Further, if goîtreous persons were not exempt, a greater number of healthy individuals would remain at home, would marry, and would become parents of sound and vigorous children."—Guy and Dagand.

has been suggested as accounting for the crétinism of the Rhone valley.

Others have imagined that intemperance,* poor living, foul habits, and personal uncleanness, sow the seeds of crétinism, and this opinion is entitled to full consideration. Intemperance of divers kinds is fruitful in the production of insanity,† and herding together in filthy dwellings, with little or no ventilation, may possibly deteriorate *physique*, as much as extreme indulgence may the mind. These ideas are popularly entertained because crétins are more numerous amongst the lower orders than amongst the well-to-do classes. Yet they must, each and all, be regarded as inadequate to account for the disease, still less to explain its excess in the centre of the valley. For in these respects there is little or no distinction between it, the two extremities, and the neighbouring districts.

A conjecture remains to be considered regarding the origin of crétinism, which is floating in the minds of many persons (although it is seldom expressed), which carries with it an air of probability that is wanting in the other explanations, and which is supported by admitted facts.

The fertility of the Valley of Aosta is proverbial. It is covered with vineyards and corn-fields; flocks and herds abound in it; and its mineral resources are great. There is enough and to spare both for man and beast. There are poor in the valley, as there are everywhere, but life is so far easy that they are not driven to seek for subsistence in other places, and remain from generation to

* An instance was mentioned to me, in 1869, of a small proprietor in the Valley of Aosta, who had a wife and several healthy children, having, successively, two good years with his vines. He ate and drank the proceeds up, instead of husbanding his resources, and in the two following years two crétin children were born to him. Several indifferently-good years have succeeded since then, he has been obliged to live frugally, and has had several more children, all of whom are healthy. The parents are apparently free from all taint of crétinism.

† See Dr. Robert Christison *On some of the Medico-legal Relations of the Habit of Intemperance*, 1861; Dr. Edward Jarvis *On the Causes of Insanity*, 1851; and Reports of the Commissioners in Lunacy.

generation rooted to their native soil. The large numbers of persons who are found in this valley having the same surnames is a proof of the well-known fact that there is little or no emigration from the valley, and that there is an indefinite amount of intermarriage between the natives. It is conjectured that the continuance of these conditions through a long period has rendered the population more or less consanguineous, and that we see in crétinism an example, upon a large scale, of the evil effects of alliances of kindred.

This explanation commends itself by reason of its general applicability to crétinism. The disease is commonly found in valleys, on islands,* or in other circumscribed areas, in which circulation is restricted, or the inhabitants are non-migratory; and it is rare on plains, where communications are free. It will at once be asked, "Why, then, are not the tributary valleys of the valley of Aosta full of crétins?" The answer is, that these lateral valleys are comparatively sterile, and are unable to support their population from their internal resources. Large numbers annually leave, and do not return,—some come back, having formed alliances elsewhere. There is a constant circulation and introduction of new blood. I am not aware that there are returns to show the extent to which this goes on, but the fact is notorious.†

* Dr. Blackie gives the remarkable instance of "the island of Medwörth (Niederwörth?), near Coblenz, where the inhabitants hold no connection with those on shore, and consequently intermarry constantly with one another." This island, according to Dr. Blackie, had no less than 40 crétins out of a population of 750.

† The case of the Val Sesia is not strictly in point, since it is not a tributary of the Val d'Aoste, but it may be quoted to show the extent to which this migration goes on. Mr. King says, "The population of the whole Val Sesia being estimated at 35,000, it is evidently utterly unable to maintain a tithe of that number from its own resources. The necessary result is, a regular periodical migration of all the able-bodied and active males, for varying lengths of time, into different parts of Europe. . . . A large number of the towns of Italy and France, as Genoa, Milan, Turin, and even Paris, are supplied with an immense influx of skilled labourers and artificers from these Vals. Some idea of the extent of this migration may be formed from the fact, that 8000 Val Sesians leave their homes annually, many of them for years."—*Italian Valleys of the Alps*, p. 373.

This conjecture explains, far better than the other guesses, why it is that crétinism has so strong a hold upon the lower classes, while it leaves the upper ones almost untouched ; for the former are most likely to intermarry with people of their own district, whilst the latter are under no sort of compulsion in this respect. It gives a clue, too, to the reason of the particular intensity in the centre of the valley. The inhabitants of the lower extremity communicate and mix with the untainted dwellers on the plains, whilst the conditions at the upper extremity approximate to those of the lateral valleys. Before this explanation will be generally received, a closer connection will have to be established between the assumed cause and the presumed effect.* Accepting it, nevertheless, as a probable and reasonable one, let us now consider what prospect there is of checking the progress of the disease.

It is, of course, impossible to change the habits of the natives of the valley of Aosta suddenly, and it would, probably, be very difficult to cause any large amount of emigration or immigration. In the present embarrassed condition of Italian finances there is very small chance of any measure of the sort being undertaken if it would involve a considerable expenditure. The opening of a railway from Ivrea to Aosta might possibly bring about, in a natural way, more movement than would be promoted by any legislation, and by this means the happiest effects might be produced.†

There is little hope of practical results from attempts to cure

* It may be mentioned, as a link in the evidence, that the Department of the Hautes Alpes (which contains a prodigious number of crétins) has, according to Chipault, a larger proportion of deaf and dumb persons to its population than any other department of France, viz. 1 in 419. The Department of the Basses Pyrénées comes next, with 1 in 677.

† “M. Rambuteau (Préfet of the Department of the Simplon, under the first Napoleon) and M. Fodéré assure us, that at the close of last century the number of crétins in the Canton Valais diminished to a very great degree. The former attributed this amelioration to the embankment of the Rhone, and the draining of the marshes ; to the clearing of the land ; and the consequent changes in the character of the inhabitants, who became more industrious and active, and less given to gluttony and drunkenness. The latter author rather imputed it to the opening of the great

crétins. Once a crétin, you are always one.* The experiments of the late Dr. Guggenbühl demonstrated that some *half*-crétins may even become useful members of society, if they are taken in hand early in life ; but they did not show that the nature of the true or complete crétin could be altered.† He essayed to modify some of the mildest forms of crétinism, but did not strike at the root of the evil. If fifty Guggenbühls were at work in the single valley of Aosta, they would take several generations to produce an appreciable effect, and they would never extirpate the disease so long as its sources were unassailed.

Nor will the house which has been built at Aosta‡ to contain 200 crétin beggars do much, unless the inmates are restrained from perpetuating their own degradation. Even the lowest types of crétins may be procreative, and it is said that the unlimited liberty which is allowed to them has caused infinite mischief. A large proportion of the crétins who will be born in the next generation will undoubtedly be offspring of crétin parents. It is strange that self-interest does not lead the natives of Aosta to place their crétins under such restrictions as would prevent their illicit intercourse ; and it is still more surprising to find the Catholic Church actually legalising their marriage. There is something horribly grotesque in the idea of *solemnising* the union of a brace of idiots ; pass of the Simplon, and consequent more easy communication with other countries, the people being thus more incited to bestir themselves," etc. ; Blackie, p. 53. This testimony, from authors who held totally different opinions as to the origin of crétinism, is strongly confirmatory of the conjecture last advanced.

* "Le crétinisme achevé est incurable ; l'état physique et intellectuel des crétineux et des demi-crétins est susceptible d'amélioration par un traitement convenable, des soins et l'éducation ; mais jamais on ne pourra faire d'eux des hommes complets sous le rapport physique, moral, et intellectuel."—Guy and Dagand on *Crétinisme dans le Département de la Haute-Savoie*.

† Great expectations were raised some years ago by the reports of Dr. Guggenbühl, and by those of visitors to his establishment on the Abendberg, at Interlachen ; but they have been disappointed, and the institution itself has been closed.

‡ At the expense of some unknown charitable person. Besides this establishment, there is an hospital at Aosta, belonging to the order of St. Maurice et Lazare, containing twelve beds for crétin children.

and since it is well known that the disease is hereditary, and develops in successive generations, the fact that such marriages are sanctioned is scandalous and infamous.*

The supply, therefore, is kept up from two sources. The first contingent is derived from apparently healthy parents ; the second, by inheritance from diseased persons. The origin of the first is obscure ; and before its quota can be cut off, or even diminished, the mystery which envelopes it must be dissipated. The remedy for the second is obvious, and is in the hands of the authorities—particularly in those of the clergy. Marriage must be prohibited to all who are affected ; the most extreme cases must be placed under restraint ; and crétins whose origin is illegitimate must be subject to disabilities. Nothing short of the adoption of these measures will meet the case. Useless it will be, so long as the primary sources of the disease are untouched, to build hospitals, to cleanse dwellings, to widen streets, or to attempt small ameliorations of the social circumstances of the natives. All of these things are good enough in themselves, but they are wholly impotent to effect a radical change.

No satisfactory conclusion will be arrived at regarding the origin of crétinism until the pedigrees of a large number of examples have been traced. The numerical test is the only one which is likely to discover the reality. The necessary inquiries are beyond the powers of private persons, and their pursuit will be found suf-

* It should be stated, that some of the clergy, at least, refuse to unite the worst kinds of crétins. I have heard it said, however, that all are not so particular ; and, again, others have told me that crétins are *never* legally married in the valley of Aosta. I imagine the truth to be, that some of the priests are scrupulous, and that others are not. The evidence of the natives upon this subject was so conflicting, that I applied to the Canon Carrel (of Aosta) for information. His answer was sufficiently explicit as to the *general* custom :—“ Il y a des crétins qui parlent avec une certaine intelligence, et qui sont capables d'apprendre quelques vérités et quelques notions nécessaires aux devoirs sociaux. Ceux-ci contractent quelquefois mariage. Quant à ceux qui ont l'intelligence très obtuse, on ne leur permet pas le mariage, quoiqu'ils puissent encore engendrer ce qui tient plus de la loi naturelle que de la loi civile.”

ficiently difficult by official investigators. Great reluctance will be exhibited to disclose the information which should be sought, and the common cry will certainly be raised, that such scrutiny is without general advantage, and is painful to private feelings. But, in matters which affect mankind in general, individual feelings must always be subordinated to the public interest ; and if the truth is to be arrived at in regard to crétinism, the protests of the ignorant will have to be overridden.

Hitherto, those who have written upon the disease have confined themselves, almost exclusively, to guessing at its origin ; and accurate data, from which sound deductions can be made, are, I believe, entirely wanting.* *We*, however, are not in a position to taunt others with neglect of inquiry. Only a few months ago the House of Commons rejected, by a considerable majority, a proposition that was designed to throw light upon the causes of idiocy ; and the opponents of the words which it was sought to introduce, although strictly parliamentary in their arguments and language, afforded a deplorable proof that crétinism is not unknown in our own country.†

Crétinism is the least agreeable feature of the valley of Aosta, but it is, at the same time, the most striking. It has been touched upon for the sake of its human interest, and on account of those unhappy beings who—punished by the errors of their fathers—are powerless to help themselves ;—the first sight of whom produced such an impression upon the most earnest of all Alpine writers, that he declared, in a twice-repeated expression, its recollection would never be effaced from his memory.‡

At some very remote period the valley of Aosta was occupied

* For further information upon crétinism, see the works of Ferrus, Niepce, Fabre, Séguin, Nystrom, Morel, etc.

† Debate on the Census Bill, on the motion by Sir John Lubbock to insert the words “whether married to a first cousin.” The opponents of Sir J. Lubbock’s motion should read Chipault *Sur les Mariages Consanguines* : Paris, 1863.

‡ De Saussure, §§ 954, 1030.