The Dolphin at the Brighton Aquarium.

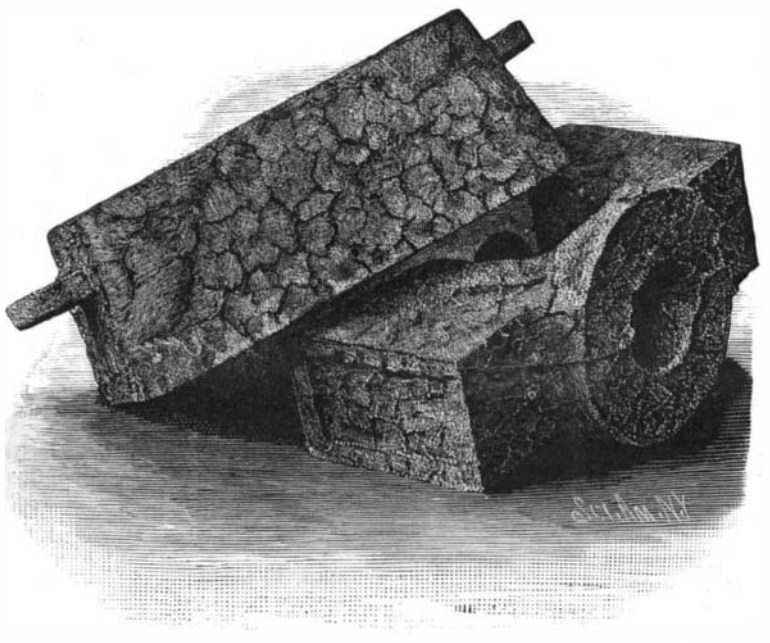
In a letter to the *Brighton Examiner*, Mr. Henry Lee writes as follows: "By the courteous invitation of the authorities of the Brighton Aquarium, I have paid a visit to the dolphin recently placed in one of the large tanks there. It is a full grown specimen of the common dolphin (*Delphinus delphis*), and is about ten feet in length. It was found, early on Saturday morning last, stranded in Selsea Bay, eight miles from any railway station; and by means of much toil, care, and skillful treatment, it was brought safely to Brighton by Mr. Lawler, the curator, after being out of the water for twenty hours. This is the third species of the whales that have been exhibited in this aquarium. The other two have been the common porpoise (*Phocæna communis*) and Risso's grampus (*Grampus riseus*).

The opportunities of observing closely the habits of the cetacea are so rare, and the average duration of their lives in captivity is so brief, that any one who feels interested in the movements, structure, and mode of life of these great sea beasts should not lose a chance of improving his acquaintance with them. In this instance, the difference between this dolphin and the porpoises previously seen in the Brighton tanks should be noted. It is of larger size, weighing about half a ton; its snout, instead of being rounded off like that of the porpoise, is lengthened out in form of a beak, both jaws of which are filled with simple, pinnate teeth; and the dorsal fin rises much higher, and the tail is rather wider across, than in the common porpoise. Those who have not seen one of these creatures under such favorable circumstances, should notice, also, its mode of locomotion. This is effected entirely by an up and down motion of the tail (unlike that of fishes, in which the movement of the tail is from side to side, except in the flat fishes), and the flippers, or "paddles," as they have been called, do not contribute to its progress in any way; they are only used as rudders and poisers. As the water in the tank has been lowered so far as to allow the dolphin to be seen when it rises to the surface of the water, the action of the blow-hole and the absence of all "spouting" should be remarked. In fact, by two minutes' intelligent observation of this interesting animal a grand practical lesson in comparative physiology is to be learned—one a thousand times more impressive than can be obtained from the most careful explanation in print. We have before us a warm-blooded animal of great brain capacity, full of intelligence, breathing atmospheric air by lungs, like ourselves, and the female of which suckles her young one, and attends to it with the greatest maternal affection. This highly organized creature, instead of walking on four legs on land, has to live and move in water; and, so, its shape is adapted to its necessities, and it is made in the external form of a fish. But it has to breathe air through its lungs, and not the oxygen contained in water through gills. If it were to inhale the air in the ordinary way—through its mouth—the water would enter with it, and choke it. To meet this difficulty, its windpipe is carried up to the top of its head, and is fitted with a valve which allows the exhausted air from the lungs to pass out, and fresh air to be drawn in, while it effectually excludes the water.

CURIOUS RESULT OF AN EARTHQUAKE.

The engraving represents the curious effect produced by an earthquake on iron castings poured at the time. The cut, which is about one-sixth the real size of the castings, was taken from a photograph sent us by Mr. F. Gergens, of Yokohama, where the earthquake occurred on June 10, 1883, at 4:30 P. M. Mr. G. attributes the waved surface of the castings to the agitation of the melted iron by the earth vibrations, the waved forms having been fixed by the cooling of the iron.

Two tons of castings made at that time all had the same appearance.



CURIOUS EFFECT PRODUCED ON MELTED IRON BY AN EARTHQUAKE.

Reduction of Ammoniacal Silver Solution by Dextrose.

It is well known that dextrose reduces the alkaline silver solution and deposits the metal in the form of a mirror. The quantity of silver precipitated by a given amount of dextrose has not hitherto been so well known, for where the only object is to get down all the silver, an excess of dextrose was of course employed. If, however, one wishes to utilize this reaction for estimating dextrose, it will be necessary to settle this point. B. Tollens says that since each molecule of sugar reduces 2½ molecules of copper in Fehling's solution, by taking up 2½ atoms of oxygen we should expect it to precipitate 5 or 6 atoms of silver. On the contrary, he found that it reduced at least twice as much. It does, indeed, reduce 12 or 13 atoms and takes up 6 atoms of oxygen; the greater or lesser quantity depending on the excess of silver in solution.

The hypothesis that 12 atoms of silver are reduced by 1 molecule of dextrose gives rise to this equation:

$$C_6H_{12}O_6+O_6=6CH_2O_2,$$

forming formic acid, and in fact a good deal of this acid is produced. The author also detected oxalic acid when there was an excess of silver, which requires 9 atoms of oxygen, reducing 18 of silver.—*Berichte.*

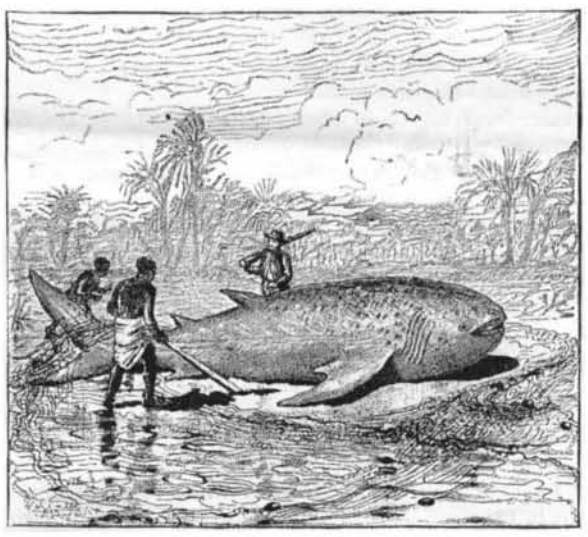
A REMARKABLE SHARK.

To the Editor of the Scientific American:

A perusal of the articles on sharks, appearing in two late numbers of your Export Edition, prompts me to mention a large African shark now in the Colombo Museum, and described per label as follows:

"*Smith's Spotted Shark* (*Rhinodon typicus*, Smith).—An East African shark, never before recorded from Indian Seas. Was caught in a fishing net at Moratuwa, January 5, 1883. Length, 23 feet; girth, 13 ft."

I have verified the above measurements, and can add that the mouth, which (unlike most other sharks') opens on a level with the snout, is 5 feet in circumference, destitute of teeth, but armed with strong cartilaginous bands; and the



EAST AFRICAN SHARK, COLOMBO MUSEUM.

gills, five on a side, behind the shoulders, are each 2 ft. 3 in. long. The color is dark brown, mottled all over the back and sides with spots very like in appearance the mottles on well groomed brown and gray horses.

The monster was, as is set forth above, caught in a net, more properly a seine, called by the Sinhalese *Maha-dthalle* (great net), which, by being run off into the sea a quarter mile or more, then carried along about the same distance parallel with the beach, and again brought to land, incloses many acres of water, at times teeming with fish, which are thus secured in large numbers; and it is a most animating sight, in traveling between Colombo and Kalutara by railroad or coach, to see the thousands of people, men and boys, engaged in this industry, for most of them are nearly amphibious, and while the seine is being laid out the water is alive with dusky human forms, big and small, swimming and disporting about among the fishes they are capturing; and when finally the cast has been made, and the word given to draw in the net, hundreds of willing hands take hold of the long drag ropes, and, to a lively song, march up the beach, drawing in their finny prey.

Ordinarily, a shark of such immense proportions would prove an unwelcome occupant of one of these nets, for he would soon demolish it. Accordingly, the presence of this one inside of their seine must at first have caused the fishermen some perturbation. It seems, however, that he lay nearly motionless on the water, and was easily drawn to the shore, upon reaching which he immediately expired. On examination, its stomach proved to be empty, which fact, together with its great size and easy capture, would indicate that the creature died of extreme old age. It was quite fat, however, and many gallons of oil were tried out of its blubber.

Unlike most fish stories, this one is true; and it also has its sentimental aspect, since the distinguished visitor and subject of it arrived here, probably after an exhausting journey from Africa, simultaneously with Arabi Pasha and his fellow exiles from Egypt, who are now living in Ceylon.

The waters of Ceylon abound in fish of great variety, among which are several members of the shark family, notably the white shark (*Squalus carcharias*), saw fish (*S. trestis*), from 12 to 18 ft. long, hammer head (*Zygœna vulgaris*), tope (*S. galens*), blue shark (*S. glaucus*), basking shark (*S. maximus*), the skin of which is used by the Chinese for making shagreen, monkey mouth shark (*Stegostoma tigrina*), tiger shark (*Galeocredo tigrinus*), mud shark (*Rhyncobates ancytortimus*), and at least two varieties of the sword fish (*Histophorus gladius*), all of which are carnivorous, and most of them used for food by the natives. More especially is this the case with respect to the flesh of young sharks, which is commonly given to women, shortly after confinement, under the supposition, true or false, of its conducing to an abundant supply of lacteal nourishment for the infant.

W. MOREY.

Colombo, Ceylon, March 22, 1883.

Should Women Ride like Men?

The above subject having created considerable discussion in the English newspapers, the *Lancet* (London) now takes it up and concludes that it would be as well to leave the determination of the question to those whom it principally concerns. We fancy they have no wish to change the custom. As a matter of fact, although it may not appear to be the case, the writer continues, the seat which a woman enjoys on a side-saddle is fully as secure, and not nearly as irksome, as that which a man has to maintain, unless he simply balances himself and does not gripe the sides of his horse either with the knee or the side of the leg. It is curious to note the different ways in which the legs of men who pass much time in the saddle are affected. Riding with a straight leg and a long stirrup almost invariably produces what are popularly called knocked-knees. Nearly all the mounted soldiers of the British army suffer from this deformity, as any one who will take the trouble to notice the men of the Life Guards and Blues walking may satisfy himself. On the other hand, riding with a short stirrup produces bowed-legs. Jockeys, grooms, and most hunting men who ride very frequently are more or less bow-legged. The long stirrup rider gripes his horse with the knee, while the short stirrup rider gripes him with the inner side of the leg below the knee. This difference of action explains the difference of result. No deformity necessarily follows the use of the side saddle if the precaution be taken with growing girls to change sides on alternate days, riding on the left side one day and the right on the next. The purpose of this change is to counteract the tendency to lean over to the side opposite that on which the leg is swung.

Losses by Fire.

An exchange thinks it is strange how accustomed people will become to the repeated occurrence of events which, if there were but one in a lifetime, or even in a series of years, would create the most intense excitement. Note, as an instance, adds the *Fireman's Journal*, the destruction of property by fire in this country. Think how many men, how much capital, and how great a share of the intelligent thought of the land are kept constantly employed because of this. Every municipality in the land is constantly agitated over the question of fire extinguishment, every property owner over the question of fire insurance, and every builder and property owner over that of fire prevention.

Each in turn gives employment to a vast number of men whose whole thought is engrossed by this annual wiping out of existence of a portion of the wealth of the land, by no means inconsiderable, whether regarded absolutely, or in its relation to the entire production of the year. Thus, since the 1st of January there has been destroyed by fire in this country, $34,960,727 worth of property, and we may reasonably expect that the final showing for the whole year will not be less than $77,334,500 worth.

Bartholdi, the French Sculptor.

Frederic Auguste Bartholdi, the sculptor, who is completing his immense statue of "Liberty enlightening the World" as a present to this country, is about fifty years old. He was a pupil of the famous Ary Scheffer, and was one of the French commissioners at the centennial exhibition at Philadelphia in 1876. He was so well pleased with his visit here that he decided on carrying out his previous intention as to the great statue, and on his return to France instituted a subscription for the construction of the gigantic figure for New York harbor, volunteering his work. And when subscriptions lagged, he pledged his own private fortune to its completion.

In addition to this statue, M. Bartholdi is engaged on the sculpture of a lion, to be cut out of solid rock, on the face of a mountain at Belfort, France, the figure to be eighty feet long and thirty feet high.

VISITORS find in some of the older houses of Nantucket tall Dutch clocks, with holes in the cases where screws had been taken out. This was done in order to banish wicked ornaments of brass and steel.

Snake Poisons.

Those who have read the famous Dr. Richard Mead's original essay on the poison of the viper will now read it again by the side of the report of the venom of serpents by Drs. Weir Mitchell and Reichert, of Philadelphia, Pa., to which we briefly drew attention last week. Mead struck the instant attention of the world by the bold, and, as it seemed, wonderful experiment of swallowing the deadly poison of the viper, and escaping unhurt. What led to his experiment is rather obscure, but it was done, and the discovery was thereby made that a physical venom of the most potent kind could be received into the stomach and disposed of there as if it were no more than a harmless food. Mead did more than this. In his day the use of the magnifying glass was just coming into practice, and he, eying the dried poison through such a glass, discovered in it what he very naturally supposed to be fine, needle shaped crystals. He argued about these crystals, and what they did; they were very sharp crystals, and when they got into the blood they pricked and injured, as he thought, the delicate blood-corpuscles, and so caused the death of the blood, and the death also of the owner of the blood—a hypothesis which, in days when the iatro-mathematics held sway, was as ingenious as it was forcible.

Modern readers, perusing the latest researches on physical venom, will see, with curiosity, that Mitchell and Reichert rediscover what Mead called the crystals, and will understand better than the old master why the venom can be so safely swallowed. These latest writers inform us that all the serpent venoms they have examined possess certain common characteristics. In the fresh state, the venoms are in the form of a slightly turbid yellowish fluid, varying more or less in degree of viscidity, odorless, and invariably of acid reaction. In their dried state, they are soluble in water at ordinary temperatures, save for a slight cloudiness, which but slowly settles. Thus dried, they resemble ordinary egg albumen; and when prepared in small quantities in a porcelain capsule, innumerable radiating lines of fracture occur, which break the mass into long needle like pieces closely resembling acicular crystals; indeed, the resemblance is so striking that the uninitiated are frequently deceived as to the true physical condition of the venom. This doubtless was the deception to which Richard Mead was subjected.

In describing the external symptoms produced by the different crude venoms, Mitchell and Reichert observe that such symptoms do not differ radically except in degree. From all alike there is produced some primary beart disturbance, temporarily lowered blood pressure, fatal enfeeblement of the respiratory centers, local effusion of blood, with lessening or loss of its power to clot, and, when the animal subjected to the venom survives some hours or a day, noticeable breaking down of the capillaries, and tendency to putrescence and gangrene. Of the different poisons, cobra venom is the most intense in its poisoning power, that of the copperhead next, then the venoms of the moccasin and the rattlesnake. In the course of their researches these investigators have been led to consider that the serpent venom does not contain an alkaloid, as had been surmised by other inquirers, but that it is in every case made up of three distinct proteid bodies, of which two are soluble in distilled water and one is not. The first of these proteids they declare to be a peptone—*peptic venom;* the second a globulin resembling paraglobulin—*globulin venom;* the third resembling albumen—*albumen venom.* Respecting the active properties of these particular parts, the following is deduced from the experiments related: The peptone venom, which remains uncoagulated by boiling, which will dialyze, and which responds to all the characteristic tests by which its place in the family of proteids is determined, is poisonous, but is far from possessing all the poisonous characters of the compound venomous fluid from which it is derived, being slower in its action, and producing local effects which are œdematous in character and ultimately putrefactive. The venom globulin, on the other band, is a poison of such virulence that one-twentieth of a grain of it is sufficient to kill a strong pigeon in the course of two hours, and to give rise, within a few minutes after injection, to enormous infiltration of blood into the neighboring tissue. But this venom has no effect on the blood-pressure, in which it differs from the venom peptone, under which that pressure is reduced. The albumen venom is doubtfully poisonous, and, on the whole, the full action of the natural or crude venom as it is produced by the serpent may be considered as represented by the two distinctive parts called by the authors peptone venom and globulin venom.

It is very rare to find in so few pages as have been sent us by Mitchell and Reichert so much new and valuable information. What they have discovered reaches far beyond the direct object of their inquiry, important as that is of itself alone. They lead us by what they have done into new lines of study regarding all the diseases which originate in organic animal poisons. They show to us that certain animal bodies can themselves, by their own vital chemistry, produce at least two organic poisonous substances, and they strengthen the view of those who have dared to think that the same process of self-production of the organic poisons has a range wide enough to account for all those phenomena of disease which, starting from organic virus, pursue a regular course, and in that course reproduce the virus, by modified physiological action, just as the serpent by natural proecss reproduces its venomous secretion.—*London Lancet.*

The Psychology of Panics.

Referring to the Brooklyn Bridge horror, and a more recent similar disaster in England, leads the *Medical Record* to define what a panic is, and to repeat what most persons know in their calm moments to be the remedy. But when the emergency comes, how few withstand the test of their philosophy!

A panic is an acute disease of the brain; it belongs to medicine and to morbid psychology. A genuine panic is an insanity of the mass. The activity of the higher centers is suspended, reason is gone, the whole force of volition is turned in one channel, the whole energy of the emotions is translated into fear of danger and desire for safety. The panic-struck are anæsthetic, insensible to injury, ignorant of any sight or sound, or taste or smell, except such as relate to their effort for safety. Man when in panic touches as near as ever he can to the mental condition of a beast. A runaway horse, a frightened flock of sheep, a panic struck crowd are on the same mental level.

There is no emotion so contagious as that of fear, and no desire so strong, so intimately wrought into our nature, as that of self-preservation. Hence the rapidity with which the psychological contagion of the panic spreads itself. The strongest and bravest man becomes tremulous when in a crowd struck with fear. Panics have their predisposing causes. The mind, when wrought upon by harrowing recitals of previous disasters, or when made unstable from nervous weakness, or insecure by lack of confidence, is most readily affected. For this reason it seems probable that there is at present a widespread predisposition to panics.

The best prophylactic for a panic is the cultivation of a stable nervous system and of the habit of being mentally prepared for contingencies. Every one should know where the fire escapes are in the hotel in which he sleeps, or the exits in the theater which he attends. If each person were to take these precautions, it would certainly make a difference in the number and extent of panics.

No doubt the best thing for the individual to do in case of panic is in most cases to remain still. One cannot stifle emotion, but one can often restrain action, which latter is the thing that does the harm. In incipient panics, loud noises, a confident speech, music, or any distracting object may still affect the mind and check the tide of feeling before it has yet concentrated upon the single purpose of escape.

The class of men who are least affected by and least liable to panics is, the *Medical Record* claims to be, the doctors. We speak from knowledge, the writer adds. We have seen, in a demonstration before a large medical audience, an explosion occur with a flash of flame, burning ether running down and over the table. There was not a cry nor a stir in the whole audience, the fire was put out by throwing cloths over it, and the demonstration went on. We have often witnessed similar accidents on a smaller scale—and the experience is not infrequent—but never have we heard of a party of physicians panic-struck. The reason is easy to see: every medical man is continually called to meet emergencies and to allay panics on a smaller or larger scale. A doctor who has been called to see infants with sudden attacks of croup, children in convulsions, women in hysterical moods, and the various other pathological factors of domestic upheaval, necessarily requires very extraordinary circumstances for the complete disturbance of his own equilibrium.

Decapitation of Insects.

In a current number of the *Rivista Scientifico Industriale,* published at Florence, Dr. Canestrini relates his attempts to determine the duration of vitality maintained by insects after he had cut off their heads, and he gives a table of his results, which contains some curious and surprising statements. He says he found himself at Trentino in the valley of the Non in September, 1882, during the rainy season, when, by reason of the floods everywhere, the insects ascend the plants and trees, and permit themselves to be captured in great numbers. The species of *coleoptera* and *orthoptera* prevailed, and upon single plants surrounded by water he not unfrequently found forty or more specimens of *coleoptera* belonging to different families and genera. He continued his investigations three months, and appears but partially satisfied with his results.

The operation of beheading his unfortunate captives was performed with a very sharp forceps and with razors. It was an easy task in some cases as with the *diptera, hymenoptera, orthoptera,* and very difficult in others. Complete assurance as to the actual death of the insects after decapitation was not always a simple matter to obtain, and when the animal, left alone, had ceased to give any tokens of vitality, it was necessary to apply artificial stimulants, as pressure, pricking, or tobacco smoke, when almost invariably some response came from the motionless creature. The *coleoptera* showed considerable sensitivity, and with them the *orthoptera* and *hymenoptera,* many suffering almost instant death, while other insects seemed almost totally unaffected by it. The *lepidoptera* after decapitation did not seem to be seriously discommoded, and the *diptera* behaved with even greater stoicism. Dr. Canestrini relates the singular fact that a female fly underwent copulation twice after amputation, and that others remained standing upon their legs brushing and cleaning themselves with complete indifference to their condition.

The duration of movements varied extremely in different insects, both in the head and trunk, and some subjects flew after 18 days had elapsed after their mutilation, while the bodies of grasshoppers continued to hop after a period of 18 days, and the praying mantis continued its motions through 14 days. Dr. Canestrini then gives a table in which the length of time during which motions were observed in the trunk and head after decapitation are tabulated for the classes of insects experimented with:

Insects experimented upon.	Duration of movements.	
	The trunk.	The head.
Geotrupes stercorarius	5 days.	16 hours.
Cetonia aurata	9½ "	4 "
Silpha obscura	6 "	12 "
Harpalus	60 hours.	10 "
Butterflies (various species)	18 days.	A few "
Ants (Formica rufa)	30 hour.	30 "
Wasps	5 days.	24 "
Bees	40 hours.	Various hours.
Bombus	30 "	3 hours.
Flies	36 "	6 "
Hornets	27 "	3 "
Mole crickets	9 days.	78 "
Katydids	5 "	80 "
Locusts	8 "	48 hrs. and over
Mantis religiosa	14 "	60 hours.
Pyrrhocaris apterus	4 "	Some hours

From the table death or lifelessness ensues more quickly in the head than in the trunk, but it is remarkable how exquisite the sensitiveness to stimulation is in both these parts in some insects, long after their separation. Thus the katydids will jump and the antennæ and palpi of its head move a long time after decapitation. With other insects quite the reverse was observed. Again, the author remarks that low temperatures conjoined with humidity favored the longevity of his subjects both as to head and body. The moisture seems especially necessary, preserving mobility of the parts, their flexibility and softness, and in consequence aiding their sentience, at least in the cases examined by Dr. Canestrini. The last joints of the legs retain vitality the longest. The influence of moisture was especially striking with the *myriapods,* which under such conditions appeared in some species almost indifferent to this frightful amputation, running hastily away with the anterior extremity of their trunk raised, and persisting in this state of activity for many days.

L. P. G.

Education for Boys.

A new school, supplementary to the ordinary grammar school, and an improvement on the ordinary high school, has been projected, to be located at Lawrenceville, N. J., to be endowed and sustained by the wealth of the late John C. Green, of the above place, a village on the main road between Trenton and Princeton, N. J. The design is to provide accommodations and tuition for boys in imitation of the famous English schools of Eton and Harrow. The architect's designs include a large main building, a chapel, five masters' houses, the head master's house, a central dormitory, and a gymnasium, together with bath, steam, gas, and play houses, and a laundry. These accommodations are intended for a school of 200 or 300 boys. Mr. Frederick Law Olmsted has been employed to take charge of the landscape gardening.

The amount of the fund devised by the founder is not only sufficient to provide for all the initial equipments, but will include aid to indigent students, while those of tried scholarship and character will have their tuition remitted. About thirty of the most promising students also will receive annual scholarships, sufficient, with economy, to maintain them in their studies. Each one of five assistant masters will have a cottage on the grounds large enough for the accommodation of his family and of twenty pupils. By this scheme of boarding the home life of the boys will be continued, and the usual practice of herding great numbers in dormitories, under the supervision of tutors, will be done away with.

Analyses of American Barleys.

The following analyses, by Schwartz, have been published, and they tend to show that American barley is richer in starch, and therefore in extract, than European barley:

	Maximum.	Minimum.	Mean of a number of analyses.
Moisture	16·96	10·46	13·71
Starch	68·33	63·77	66 05
Albuminoids	13·58	9·23	11·41
Ash	3·74	2·72	3·23
Phosphoric acid	1·050	0 850	0 953

The percentages of starch, albuminoids, ash, and phosphoric acid are calculated on the perfectly dry barleys. We also give the comparative analyses of American and European barleys by the same authority:

	American.	European.
Moisture	13·71	15·11
Starch	66·05	64·14
Albuminoids	11·41	11·21
Ash	3·23	—
Phosphoric acid	0·953	0·995

Fall of the Bowlder.

"The big bowlder" that bas been so great an attraction to visitors to the "Flume," at Franconia Notch, New Hampshire, has fallen from its position, where it had been held high above the turbulent stream, gripped between the rocky walls of the gorge like a pebble between the jaws of a vice. It will be a serious loss to the attractions of that singular rock wall formation known as the Flume, the upper or northern part of which has just undergone other remarkable changes caused by the moving of rocks by June floods.