

The Spitting Habit and Spread of Consumption.

In England and Wales, according to Dr. W. Murrell, from 50,000 to 60,000 people die annually from consumption; and another 50,000 from other tuberculous diseases. From 1848 to 1880, 1,702,002 deaths were registered due to phthisis, the majority being young adults. No other disease claims an equal number of victims. Its infectious nature being well recognized, every effort should be put forth to minimize its communicability. Among the many means by which this dread disease may be disseminated, one of the most prevalent arises from the consumptive's expectorations. This sputa, as bacteriologists have shown us, carries the tubercle bacillus in varying quantities. When dried, these germs are taken up by the atmosphere, then inhaled by the well and sick.

By this means there is no reason to doubt that phthisis is often conveyed directly to individuals. It has been proved beyond a reasonable doubt that these diseased germs are also given off by the consumptive's breath and that husbands have taken it from wives and wives from husbands. We have here a source of infection to which enough attention has not been given. Of all the filthy habits to which a considerable portion of our people are given, perhaps the very worst is the spitting habit.

No place is too sacred for them to pollute. On the street, on cars, boats, in stores, in our homes, we are constantly reminded of the passage of the spitter. Ladies trail their gowns through this filth, bring it into their homes, when, having dried, the bacteria are given off with every movement of their garments. That the consumptive may cause a health resort to become a place to be shunned is exemplified in the case of the Riviera. Its climate is most salubrious, and when consumptives first went there this disease was an unknown quantity; now it has become as firmly established there as in any consumptive country. The air and soil have become so contaminated that the natives have fallen victims to this disease. The washerwomen in particular have been attacked. The Riviera is no longer a health resort, but a place to be avoided by weak lunged persons. California's beautiful climate has brought thousands of consumptives there for their health. In the southern portion of the State in particular there are evidences already that this disease is spreading to those who have heretofore felt that there was no danger in living among consumptives. In a word, may not foci for the spread of phthisis be already established in various towns, due to the contamination of soil and air? If so, how long will it be before these towns will cease to send out alluring advertisements welcoming the consumptive to come and make these places their homes? Not very long we believe after the masses have learned the truth concerning a disease which carries off more persons annually than any other single disease. The danger of dissemination can be greatly minimized by regulating the care of consumptives. Indiscriminate expectoration must not be tolerated. Hotels should have some disinfective fluid to be daily put into the cuspidors about the offices and halls. The same method should be carried out in all public buildings. The handkerchief should be used, as a rule, by every person when it becomes necessary to expectorate. Consumptives should have pieces of cloth or paper which can afterward be burned. What a travesty this is on our boasted civilization to see signs with these words, "No spitting on the floor," meeting us at every turn.—Pacific Medical Journal.

Animal Antipathies.

A correspondent of the London Spectator describes a curious scene witnessed at the Zoological Gardens. He had for companion a gentleman, now dead, who was a dwarf, and walked with crutches. "As soon as the tiger saw him he lashed his tail, and finally stood up on his hind legs against the bars and remained in a state of great excitement. We who saw it at the time were much struck by the sight, though whether its behavior was due to alarm or intense curiosity we could not tell." Probably the tiger's excitement was due to neither, but to the latent antipathy which many animals feel for anything abnormal, either in their own species or even among others with which they are well acquainted. It is the feeling which prompts storks or rooks to destroy at once the young of other birds which are hatched from eggs placed in their nests, and dogs to bark at cripples or ragged beggars, or, as in this case, roused the dislike of an observant Zoo tiger who saw men of normal size and proportions pass every day before its cage.

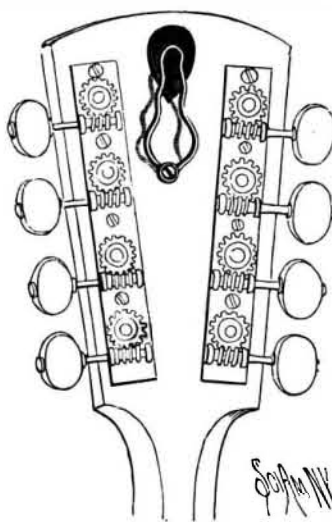
The belief in permanent antipathies among animals is very ancient. It appears in all the monkish teritiaries. There the otter is always the enemy of the crocodile, and the unicorn of the elephant; while the dragon is hated by the hart, and in turn dislikes all beasts, including the panther, whose exquisite perfume, so agreeable to all other animals, disgusts the dragon, who runs away the moment he smells it. Turning from legend to facts, we find that animal antipathies have a range as wide or wider than the instinctive dislikes of men. They are in part exactly the same in kind as the latter, one animal exciting in

another exactly the same disgust that a baboon or a black beetle does in the minds of many human beings; but the list of hereditary enemies—of one species which is the sworn foe of another, and has left in the weaker species an inbred and ancient sense of horror and fear—is far longer than the list of hereditary enemies of the dominant species—man.

Instances of purely instinctive, inexplicable antipathy are naturally the least common, but they are very marked and definite examples. It is quite impossible, for instance, to account for the intense disgust which the camel excites in horses. They have been associated in many countries for centuries in the common service of man, and early training makes the horse acquiesce in the proximity of the creature which disgusts him. Otherwise it is far more difficult to accustom horses to work with camels than with elephants, precisely because the repugnance is a natural antipathy, and not a reasoned fear. They get used to the sight of an elephant, but the smell of a camel disgusts and frightens them. English horses which have never seen a camel refuse to approach ground where they have stood. Recently a traveling menagerie was refused leave to encamp on a village green in Suffolk, not because it was not welcome, for a wild beast show is always vastly popular, but because the green was also the site of a market, and the farmers' gig horses invariably refused to be driven across it after camels had stood there. Yet recently two bears were being exhibited in Harley Street, and no horse showed any fear of them. One horse almost touched the larger bear, but neither it nor the team of a four-in-hand which passed showed any nervousness.

A MUSICAL INSTRUMENT ATTACHMENT.

The illustration represents an attachment for mandolins, guitars, etc., played by the use of a pick or plectrum in the hands of the performer, whereby the pick may be conveniently supported and always found with the instrument while not in use, while readily removable from its holder for playing when required. The improvement has been patented by Adam G. Mahler, of No. 107 East One Hundred and Twenty-fifth Street, New York City. The holder is formed of a single piece of spring wire, bent as shown in the engraving, and having its ends formed into segmental eye parts adapted to be engaged by a small screw and washer, by means of which the holder is attached to the neck of the instrument. The holder may, if desired, be secured to some other part of the instrument, and is equally well adapted for holding other forms of picks.

**MAHLER'S PICK HOLDER.****Well Water.**

The drainage into wells is often very bad, with the result of typhoid fever and many other germ diseases. On account of this danger, Dr. Koch suggests that an iron tube two or three inches in diameter—with its lower end perforated—be placed in the center of the well, and the surrounding space filled with fine gravel up to the highest point of water level. This is then covered with sand to the top of the well; and a pump attached to the end of the tube makes a very effective tube well. All water in passing through the layers of sand and gravel is effectively filtered, and the nitrifying organisms change the filth into harmless nitrates. A filter bed like this removes, too, from 80 to 90 per cent of the bacteria, and greatly, very greatly, lessens the danger to which all are subjected who drink shallow well water.—Popular Science News.

Counting and Tying Postal Cards.

Two of the most interesting automata now working within the limits of the United States are those used by the government for counting and tying postal cards into small bundles. These machines were made in Connecticut, and the two are capable of counting 500,000 cards in ten hours and wrapping and tying the same in packages of twenty-five each. In this operation the paper is pulled off a drum by two long "fingers" which come up from below, and another finger dips in a vat of mucilage and applies itself to the wrapping paper in exactly the right spot. Other parts of the machine twine the paper around the pack of cards and then a "thumb" presses over the spot where the mucilage is, and the package is thrown upon a carry belt ready for delivery.—The Argosy.

Science Notes.

At the recent B. A. meeting Prof. S. P. Thompson suggested, says the Electrical World, that X rays may be the ordinary means of optical communication among fire flies, and that, for that reason, Providence had not found it necessary to furnish the insect's eyes with a lens.

Sir John Eric Erichsen, who died recently, was born at Copenhagen in 1818, but was brought up in England. He became professor of surgery and surgeon to University College Hospital in 1850, and was elected president of the College of Surgeons in 1880. It is not too much to say that the name of Erichsen is known to every surgeon throughout the civilized world.

Prof. Lewis Swift, of the Mount Lowe Observatory, California, discovered a bright comet just about sunset on Sunday, September 20. The comet was only one degree from the sun. The next evening he observed the comet again, and found that, in consequence of its recession from the sun, it had diminished in brightness.

Nature records the death of Mr. W. C. Winlock, known for his contributions to astronomy. Mr. Winlock was assistant in charge of the office of the Smithsonian Institution. The death is also announced of Dr. J. P. E. Liesegang, a voluminous writer on photographic matters, and the founder of the Photographische Archiv; and of Dr. J. A. Moloney, who took a prominent part in the Stairs expedition to Katanga.

Experiments show that a light of one candle power is plainly visible at one mile, and one of three candle power at two miles. A ten candle power light was seen with a binocular at four miles, one of 29 at five miles, though faintly, and one of 33 candles at the same distance without difficulty. On an exceptionally clear night a white light of 3.2 candle power can be distinguished at three miles, one of 5.6 at four, and one of 1.2 at five miles.

M. Peres has investigated the cause of the severe gastric troubles which occasionally follow the eating of *pâte de foie gras*, and finds that they arise from the presence of an excess of oxalate of potassium in the goose liver. It appears that the producers of these diseased livers are wont to shorten their period of development and to produce larger livers by administering to the bird salt of sorrel, otherwise called binoxalate of potash. This process has, heretofore, been kept carefully secret, says the American Druggist.

M. Moissan has found that when acetylene is allowed to impinge upon pyrophoric iron, which has been reduced by hydrogen at the lowest possible temperature, the gas is decomposed with incandescence into its constituents. At the same time condensation takes place, and a liquid hydrocarbon, rich in benzene, is produced. The same result is obtained if pyrophoric nickel or cobalt is substituted for the iron. No gaseous compound of either metal is obtained, and he concludes that the decomposition is due to physical causes.

There is a means of physical investigation known whereby we may ascertain how many atoms there are in the molecule of a solid substance dissolved in a liquid, says the Progressive Age. This is to find out how much a given quantity of the substance dissolved raises the boiling point of the solvent liquid. This alteration in the boiling point depends on the number of molecules dissolved; and the number of molecules depends, of course, on the number of atoms in the molecule. Orndorff and Terrasse, applying this method, have found that sulphur dissolved in boiling bisulphide of carbon, or benzol, or toluol, has nine atoms in its molecule; while in boiling carbolic acid or naphthalene it has eight. In boiling monochloride of sulphur it has only two.

In a letter to the editor of Nature, Prof. A. E. Munby says the cheap production of acetylene has come as a great boon, and is now in regular use for laboratory blowpipe work. The apparatus in use consists of an aspirator holding about fifteen liters, permanently connected with a water supply, and possessing a quarter inch aperture exit tap—the water flows in from below to minimize absorption; at the top a three hole rubber cork carries an upright pipe, passing through the table, which serves for filling the aspirator with gas or using the gas on the table, a second pipe goes to the blowpipe, and a third carries an open mercury manometer. For filling the jar the calcium carbide is placed in a four ounce bottle, closed by a cork carrying a small separating funnel from which the water drops; the gas passes to the aspirator through a wide glass tube, which acts as a reversed condenser, returning most of the water vapor to the bottle. With the large exit to the aspirator the gas can always be collected under a reduced pressure of several centimeters of mercury, which quite provides against any sudden rushes of gas; the operation takes some ten minutes, and requires practically no attention. In using the gas the water is turned on with all taps closed for a few seconds, to correct any reduced pressure caused by absorption, as shown by the gage—this is very slight indeed—and then the gas tap fully opened and the flame regulated entirely by the water entrance. To bring the gas into use takes hardly any longer than with an ordinary gas blowpipe.

Some Feral Types of Patagonia.

BY GEORGE E. WALSH.

The types of dogs represented in the Arctic belt assimilate the colors, habits, and general characteristics of the wolf, fox, dhole, and other wild animals, so that it is sometimes difficult to distinguish the breeds from which they must have originally sprung; and the truth was never more forcibly illustrated than all of our dogs have a tendency to found new races of their own, and to return to the old primal stock, when freed from man's control and left to their mutual selection. The white "huskies" of the British Northwest, the "reindeer dogs" of Greenland and Lapland, and the Athabaskan dogs of Mackenzie River district, are types resembling each other in many respects, but it is easier to trace their relationship to the lynx, fox, timber wolf, coyote, dhole, and similar wild animals, than it is to discover points of resemblance to the various domesticated breeds. White is the dominant color of the circumpolar world, and the dogs have been influenced in the color of their shaggy hair by the climate just as much as the bear, fox, ermine, reindeer, owl and ptarmigan; and their color resemblance to the wild animals must not be attributed entirely to their wild habits and associations with degenerate companions.

In the southern hemisphere, the semi-wild feral types partake of the same characteristics. The dogs of the Patagonian Indians, the semi-wild canines of the sheep raiser, and the hunting dogs of the few white settlers in that solitary region, are all of different origin, but through association and cross breeding they have come to resemble each other in many respects and to assume the colors and characteristics of the various wild animals. The chief fauna of Patagonia with which the dogs would associate are the wolf, fox, puma, and coyote, and it is not difficult to see the influence of these animals upon their habits and looks. The sheep raisers of Patagonia have introduced the Scotch collie, but in their new home they have undergone changes that make them very different from the domesticated breed we are accustomed to. The white settlers who make a living in hunting brought the greyhound to their adopted land, and from this breed nearly all of the hunting dogs originally sprung. The Indians own flocks of dogs that are either mongrel greyhounds or a cross between the greyhound, Scotch collie, and the wild animals. They have degenerated to such an extent that the fine characteristics of the domesticated breed are nearly extinguished.

The dogs of Patagonia are so numerous that they wander over the country in a semi-wild condition in great packs, but, like their cousins in the Arctic belt, they form a very important factor in the lives of the people. Without the dogs, half the industries of the country would prove profitless. As the inhabitants of the circumpolar regions depend upon their dogs to drag them across the snow and ice, to hunt for them in cold weather, and to perform various other services that no other animal could do so well, so the white settlers and the Indians of Patagonia place their main reliance upon their dogs in hunting the guanaco, the ostrich, and the skin animals and in watching their enormous flocks of sheep.

Patagonia is a limitless field for the sheep raiser, and over the vast stretches of country flocks of sheep numbering many thousands roam at will, feeding upon the rich vegetation which nature provides with a lavish hand. The ranges are so wide that there is little danger of one man's flock encroaching upon the territory of his neighbor. But there is danger from wild animals and wilder dogs. The country is full of wild packs of dogs that have strayed from their masters and adopted the wild life of the wolf and fox. They are wilder and fiercer than most of the animals that we ordinarily place in the category of "wild beasts." The only wolf found in Patagonia is the aguará, a small, shy, and almost harmless creature, but the wild dogs are really a species of wolf, fully as savage and bloodthirsty as the great northern timber wolf. They hunt in packs, and, when they have been separated from any human companionship for several generations, they are as bold as the fiercest wolf of the circumpolar region.

The sheep raisers have consequently had to raise a shepherd dog capable of competing with these wild dogs, and the Scotch collie has been bred for this purpose in a cross with the greyhound. The sheep dogs of Patagonia are perfectly adapted to the country. They retain all the valuable characteristics of their Scotch ancestors, with the added strength and fierceness of the Patagonian greyhound. Five or six of these shepherd dogs will watch a flock of a thousand sheep, and do it so well that the shepherd has perfect confidence in the safety of his property. Many of the flocks number two and three thousand sheep, and one man will have this number under his care. With a pack of a dozen good dogs he can manage them with as much ease as another man could his thousand. His dogs understand their duties thoroughly, and the shepherd has trained them to work singly and together so well that there is never any confusion. In such a pack there is one dog that all the others recognize as their superior, and he is the leader of the pack, and so intelligent is

this creature that it seems as if he interpreted to the others the wishes of his master.

If a pack of wild dogs should suddenly start a commotion among the sheep on one side, the shepherd dogs are called together in a hurry. If the shepherd happens to be away, the alarm is given by the collie nearest to the scene. Instantly the leader of the pack takes up the notes of alarm and calls his forces around him. Thus bunched together they pounce down upon the wild dogs or animals like a small hurricane. There are no wild dogs that can withstand the fury of these mongrel collies, for they have the blood of excellent ancestors in their veins, which impels them onward in the fight to their very death. But it is rarely that one is killed, for they work together so well that the wild animals have no chance to resist them successfully. They are like the well trained and disciplined soldiers of a civilized nation fighting the wild savages of an unsettled country, and the results are about the same.

But protecting the sheep from the wild animals is not by any means the only or most important work required of the dogs. It is their duty to look after the sheep during the quiet hours of the day when no danger threatens. While the shepherd is attending to other duties, or quietly resting by his camp fire, the dogs must keep a good lookout for the sheep, and should any of the frolicsome ones become too far separated from the flock, the dumb shepherds must corral them in. Occasionally two large herds owned by different shepherds get together and become apparently hopelessly mixed. At such a time no human being could go among the sheep and separate them into their respective flocks. The shepherds, dangerous rivals probably in the business, and possessing antipathies for each other that sometimes lead them into deadly fights, confess their helplessness to each other, and trust everything to their intelligent collies. As if by instinct, the dogs know each member of their respective flocks, and they begin the work of separating them in a way that calls for admiration. Out and in the mixed multitudes of bellowing sheep they run, singling individual sheep, and driving them into their proper ranks. The rival dogs never quarrel, but work rapidly until the flocks have been satisfactorily divided.

How they do this no one seems to understand. It appears almost incredible that they should know each sheep in a flock of one or two thousand, or that they can distinguish one from the other, and yet such is their intelligence one is forced to the conclusion that they are able to make some such distinction. Certain it is that they divide the flocks both to the satisfaction of their masters and their own canine leaders. Count the flocks beforehand and then again after the collies have finished their work, and the figures will be found to tally every time. To prove, furthermore, that the dogs get the right sheep in the separate flocks, experiments have been made by which the members of each herd were distinguished by small marks of paint daubed on the backs of the animals. This marking was done without the knowledge of the dogs, and the sheep were immediately mixed together so that the canines could not have time to familiarize themselves with the marks.

The hunting dogs of Patagonia are developed almost as marvelously as the shepherd dogs, and the work they are called upon to do is quite as difficult. In hunting the ostrich, the Indians employ their dogs. They are fleet of foot, but not quite equal to the wild ostrich. When the ostrich is scared up, the pack of hunting dogs make a wild race across the plains after the gigantic bird. There is no fleet runner than the ostrich, and the hunters are mounted on the best horses they can secure. The great ungainly looking creature stretches out its wings, lowers its head and neck, and scurries across the country like a scare crow, and, if it kept straight on in its course, it would leave dogs and horses in the rear. But the noise of the pursuing hounds startles and frightens it and it resorts to a trick that always gives it the advantage of the dogs, if not of the hunters. When the pack of hounds are the least expecting a change in the course of the race, the ostrich suddenly springs many feet to one side, and starts off at a very different angle. The hounds are unable to check their headlong career for some time, and when they have finally stopped enough to wheel about the game has placed a hundred yards between them. Most of the hunting dogs are so demoralized by this proceeding that they slink away and refuse to renew the chase.

The hunters, however, have been waiting for this dodge, and just as soon as the big bird has swerved off to the right or left they raise their arms over their heads and swing their peculiar lasso through the air. This lasso is nothing more than a rope with a fork at the end on which two little stones are fastened. These stones are thrown with such dexterity through the air that they wind around the legs of the ostrich and entangle him so that he is thrown to the ground. The bird is never so puzzled as when brought to the earth in this way. It has not calculated upon the hunter's stratagem, and it is completely nonplussed by the sudden appearance of the strings around its legs. Some old hunting dogs become so used to this sport that

they are not at all demoralized when the ostrich dodges them, for they know that their masters will accomplish in doing what they failed in. Like the pointer or setter, they realize that their work is limited to starting up the game and chasing it to the point where the hunter can capture it.

The hunting dogs are trained also to round up the guanacos. They work in large packs, and completely surround the prey before the alarm can be given, and then they close in upon them and kill them with their sharp teeth and powerful jaws. In this work they are invaluable, and they are worth a dozen cow boys. In hunting birds and wild animals the Patagonian dogs are famous for their persistence and intelligence, but when freed from their master's control they degenerate and become worse than the wildest animals of plain or woods.

The dogs have thus become in many parts of South America a veritable pest. Introduced to help the hunters and sheep raisers, they have become a menace to the chief industries of the country. They wander over the plains in packs large enough to make it dangerous to unarmed travelers. There is a great attraction for the dogs to desert their masters and seek a living by themselves on the plains. There are plenty of sheep and lambs and other animals that make juicy eating for them to capture, and their owners have to employ the strictest discipline to keep their canine friends from deserting them. Good dogs must be chained up except when on the hunt with their owners. To neglect this for a few weeks would ruin the finest hunting dog in the country.

The dogs became such a pest ten years ago that the large sheep ranchmen had to offer bounties for their scalps to protect their own interests. The wild dogs killed the sheep by the hundreds and thousands, and the nuisance increased rather than diminished. By offering bounties for their scalps the numbers were reduced somewhat, and the shepherds could feel comparatively safe once more.

There is likely to be another uprising of the wild canines in Patagonia which will greatly injure the wool industry of the country if something is not done to exterminate the roving packs of wild creatures. They are so productive in their wild condition that they multiply rapidly, and in ten years they easily quadruple their numbers. Roaming at will in a country that offers all the food they need, and with few dangers or extremes of climate, they naturally thrive, and the death rate among them is so limited that travelers rarely find the carcass of a dead dog on the plains, although the whitened and bleached bones of innocent sheep are as plentiful as trees.

The Emission of Perfume by Plants.

A series of investigations made by M. Eugene Mesnard, in the laboratory of experimental biology of the High School of Science at Rouen, indicates that light, and not oxygen, is the chief cause of the transformation and destruction of perfumes, but that these two agents seem in many circumstances to unite their efforts. The action of light makes itself felt in two different manners: on one hand, it acts as a chemical force capable of furnishing energy to all the transformations through which odorous products pass, from their elaboration to their total resinification; on the other hand, it exerts a mechanical action that plays an important part in the general biology of the plants, and this property explains, in fact, the manner of emission of perfume by flowers. The author thinks that the intensity of the perfume of a flower depends on the equilibrium that is established at every hour in the day between the pressure of the water in the cells, which tends to expel outward the perfumes contained in the plant skin, and the action of light, which opposes this effort. He says the whole physiology of odoriferous plants depends on this principle. We may understand thus, according to M. Mesnard, why flowers are less odorous in the countries of the Orient than in our own regions: why trees, shrubs, fruits, and even pods are there sometimes full of odorous products more or less resinified; why, finally, the general vegetation there is thorny and skeletal; for in these countries there is too much light and not enough water.—*Revue Scientifique.*

Street Railways in the United States.

The street railway mileage of the principal cities of the United States is:

Philadelphia.....	400	miles.
New York (including 100 miles elevated).....	427	"
Boston (including suburban lines).....	550	"
Brooklyn (including 55 miles elevated).....	405	"
Chicago (including 66 miles elevated).....	659	"
St. Louis.....	291	"
Baltimore.....	225	"
Washington.....	140	"
San Francisco.....	231	"
Pittsburg.....	242	"
Cincinnati.....	261	"
Cleveland.....	192	"
Detroit.....	166	"
Louisville.....	150	"
Buffalo.....	146½	"

The whole street railway mileage of the United States is nearly fifteen thousand miles.—The Car.