

AN AUTOMOBILE FORAGE WAGON.

We illustrate herewith, from Les Sports Modernes, a type of forage wagon manufactured by MM. Panhard and Levassor and exhibited in the procession of military equipages at the grand maneuvers of 1900. The wagon, like all the vehicles manufactured by MM. Panhard and Levassor, is actuated by the firm's well-known gasoline motor.

Some Narcotic Plants.*

Narcotics so appeal to the imagination, that sober statements are difficult. Travelers' tales, intending truth, are often exaggerated. Even J. U. Lloyd imagines a fungus that is of the marvelous, and supposes a hidden combination of the elements that alone equals all the narcotics, and fears it will destroy our civilization and even exterminate mankind.

A recent novel uses as a foundation for a long tale, a wonderful dwarf bush of high mountains of Africa, "the dead leaves of which poison the earth, on which no bird builds its nest, no insect constructs a house, no spider spins its web—capable of raising man to a higher, stronger, finer development of brain and muscle than we could conceive of under existing circumstances. A strength-giving herb unapproached in power."

The myths of the Upas tree are so inwrought that it may be news that it is growing in the midst of coffee plantations, birds and lizards on its branches; properly treated, the inner bark can be used for garments.

Omitting the Rhus family, passing the Aminitas that gathers in the mushroom zealots, only mentioning the purple larkspur that kills sheep, in one case 250 died of 500 affected; the "snow on the mountain," a spurge that blisters like red-hot iron, and its kin the Caper spurge, of which a few seeds endanger life; the laurel deadly to sheep and horse and rendering poisonous the flesh of animals that may be themselves immune to the plant; the loco weed so injurious to stock that the State of Colorado paid out in four years \$200,000 to check its ravages, so serious is it that a horse may be so loosed as to refuse other food. These are all well known, but a few of the less noted are pareca, hidery-rhay-guill, sleepy grass, darnel and tutu.

On the Amazon River several Indian tribes use snuff, called pareca, which Wood says is made of the seeds of a species of Inga; when a bout of snuff taking is determined on the people become highly intoxicated and then use the snuff.

The effect of pareca is so violent that the taker drops as if shot, and lies insensible for some time; those more accustomed are highly excited; causing them to dance and sing as if mad; the effect soon subsides; other tribes use it to repel ague during the wet season. Lieut. W. J. Herndon, of the United States navy, in 1851 descended the Amazon; he traded for pareca and the apparatus for using it, and saw it in use, and used it. He found it to be a compound of the ashes of a vine, seeds of *Acacia angico* and leaves of the *abuta* (*cocculus*). He says: "The Indian took his pareca; his eyes started from his head, his mouth contracted, his limbs trembled, he was obliged to sit down, or he would have fallen, he was drunk; but this lasted but a few minutes; he was then gayer." He saw it administered to two children overcome with heat and work; in a few minutes they were at play. When lost in the woods, nearly dead from exhaustion and hunger and fever, unable to go farther, Lieut. Herndon took the pareca snuff. "I instantly fell drunk on the hammock, but with a peculiar intoxication, which acted on my limbs like an electric shock; on rising I put my foot to the ground, and to my surprise felt no pain. At first I thought I dreamed; I even walked without being convinced." He then beat the two Indian guides, and walked the two remaining hours of daylight.

* Read at the recent meeting of the Missouri Pharmaceutical Association. Extract from the Proceedings.—The Pharmaceutical Era.

Hidery-guill-rhay, or Indian tobacco, not plantain or lobelia, is a plant used by Indians of British Columbia and Southern Alaska, discontinued by mainland Indians, but used until 1877 or 1879 by the Hidas of Queen Charlotte Islands.

The plant dried over fire was pounded with lime into cakes, chewed or pouched in the cheek; the effect



PANHARD-LEVASSOR GASOLINE FORAGE WAGON.

was akin to tobacco or opium. Tradition is that the Indians brought the seed with them from a climate in which it grew to a tall tree, planted the seed in Alaska, but the climate reduced it to a shrub. Another myth is that the Deity caused it to grow to a tall tree, and Indian with bow and arrow shot down some seed, which he secreted and from which the tribe obtained the plant. The plant produces a nut or ball full of seeds, like a poppy. I have not been able to get for this plant a botanical name or description. Was it a poppy or betel nut? The use and growth of the plant has ceased, supplanted by tobacco.

Sleepy grass is a *Stipa*. There are one hundred species; *S. inebrians*, *S. siberica* are poisonous and are found in New Mexico, Texas and Siberia. Sleepy grass has a most injurious effect on horses and sheep. It is a strong narcotic or sedative, causing profound sleep or stupor lasting twenty-four to forty-eight hours. The horse after eating it is a pitiable object, head and tail drooping, quivering, sweat pouring down his sides, panting and palpitating. The grass acts as a powerful narcotic, diuretic, sudorific and irritant of the respiratory and cardiac organs. It is distinct from the loco weed.

Darnel, *Lolium temulentum*, indigenous to the old



QUEEN ALEXANDRA'S DAIRY AT SANDRINGHAM, ENGLAND.

world, introduced into the United States, apt to grow among wheat and grain, is narcotic, produces vertigo, dizziness, headache and a species of drunkenness; often eaten in bread. Beer in which darnel is an ingredient is drunk with impunity. A fatal case is cited of a peasant, who had for several days lived on bread, two-thirds of which was darnel. It acts thus on

man, dogs, sheep and horses. Hogs, cows, ducks and poultry are fattened on it. It contains a volatile alkaloid and a solid base which decomposes to temulenic acid. The poisonous property is in the base and acid.

Tutu or toot plant, *Coriara rustifolia*, of New Zealand, is also called wine berry shrub as wine is made from the berries; the seeds are poisonous. It is a shrubby herbaceous plant, five feet high; horses, goats and pigs are immune, cattle and sheep may be poisoned by it. To cattle fresh from other pasture, or exhausted, the plant is nearly always fatal, first stupefying, then causing strong excitement, death following in a few hours. Sheep and cattle are fattened on it, yet when driven may die. Sheep badly tutued become hermits, and stupid, but no worse as mutton.

The *Coriara myrtifolia* or tanners' sumac of Southern France killed a child that had eaten leaves and berries. The plant yields a white crystalline glucoside; three grains killed a dog. The Sioux Indians when participating in the sun dance chew a bulbous root growing in that vicinity, which alleviates hunger, thirst and pain, and enables them to endure protracted, violent muscular exertion.

The Ponce Indians make a decoction of a red bean found in the United States from Nebraska to the Rocky Mountains and which produces intoxication.

Hippomane (horsemania), manchineal, manchineal, manzanillo (little apple), is a tree indigenous to the West Indies, Central and South America and Florida, forty to fifty feet high, oval-pointed, toothed, shining leaves three to four inches long, is a Euphorbiacea. A circular was issued to United States soldiers in Cuba, "Beware of the Manchineal tree." The milky juice of the leaf stem irritates seriously any mucous membrane; many strong stories are told of its poisonous effects; it does produce temporary blindness, and it is in general as severe as poison ivy.

The fruit of the Urganu tree, South Africa, yields a strong intoxicating drink for the natives. Elephants are fond of it, becoming quite tipsy, staggering about, playing antics, screaming so as to be heard for miles and have tremendous fights; when in this state the natives leave them alone.

Herodotus says: "Scythians inhaled a smoke that intoxicates, and they rose up to dance and sing."

Plutarch reports a plant of Thrace, the smoke of which when inhaled intoxicates.

QUEEN ALEXANDRA'S DAIRY.

The agricultural arrangements at Sandringham, the home for so many years of the Prince of Wales, now King Edward VII., are excellent, the dairy being very notable. One thing which is apparent is the absence of modern dairy machinery and apparatus, not even a separator being used. The butter consumed at the royal table owes its fine quality entirely to the exercise of skill and care. As will be seen by reference to the engraving, the use of marble, tile and glass throughout insures the greatest possible cleanliness. The cows are not selected on account of pedigree, but they are fine Jerseys and good milkers, and an accurate daily record of their yield is kept. For our engraving we are indebted to Country Life Illustrated.

About midnight on Wednesday, July 17, while the Controlling Engineer for Railways at Assam and the manager of the Gauhati-Nazir section of the Assam Bengal Railway were on their half-yearly tour of inspection on the line, traveling through the great Nambur Forest, the special train ran into a herd of wild elephants which were making a night march, as is their custom, along the railway. The engine collided with one of them; and the front wheels were derailed, bringing the train to so sudden a stop that one of the inspection party was thrown out of his berth. Fortunately, the train was going at a slow speed. No damage was done. The engine was rerailed in about an hour, and was able to resume its journey, none the worse for

the encounter. The unfortunate elephant, however, had one of its back legs broken, and was so severely injured internally that it could only lie in the side drain of the slight cutting in which the train overtook the herd. On the train returning the next morning, it was lying dead in the same place. The driver stated that he counted eight elephants in all, and that a young one as well was knocked down, but apparently it was not much hurt, and with the others made off through the forest with loud trumpeting. This is not the first occasion on which a train has encountered wild elephants in Nambur Forest at night.

JUPITER STEEL.

We present a series of illustrations of a plant which possesses especial interest from the fact that it is devoted to a new process of steel-making which promises to exert something of a revolutionary effect in certain branches of the steel industry. Jupiter steel, as the product is called, is an exceptionally high grade of cast steel which is made from wrought-steel scrap, with a liberal mixture of certain other metals during the process of melting. The manufacture is carried on under several patents granted to Andres G. Lundin, and the composition of the steel, the methods of manipulation in the furnace, the special materials and careful work in the molding, have resulted for the first time in the history of the art in the production of a cast steel which, in tests carried out at the navy yard at Boston, has proved to possess qualities of strength and ductility equal to those of forged steel. These excellent results are obtained, moreover, with but little sacrifice of the high economy which distinguishes ordinary cast steel. Perhaps the best evidence of its remarkable qualities is found in the fact that cold-chisels and hatchets, cast to the finished shape in this steel, will, after being put on the emery-wheel, perform their work and hold their edge with perfect satisfaction; and one of the most striking evidences of what might be called the wrought-steel qualities of this cast-steel product is the fact that at the request of the writer two of these cast chisels were placed end to end and welded with perfectly satisfactory results.

The Lundin patents have been acquired by the United States Steel Company, whose plant—which forms the subject of our front-page illustration—is located on the Malden River, West Everett, Mass. The stock yard, which extends for several hundred feet on either side of a spur track from the Boston & Maine Railroad, is the first object of interest at these works. The stock consists of a large variety of mild-steel scrap, among which may be seen boiler-plate clippings, borings from the gunshops, the scrap from sheet-steel works, old crankshafts, and, indeed, any kind of steel that possesses the necessary composition to make up the furnace charge. The melting is carried on in a large furnace house, the steel for the smaller castings being melted down in crucibles and the metal for the larger castings being melted in 25-ton Siemens open-hearth furnaces. The preparation of the furnace charge and the introduction of various ingredients during the furnace treatment is carried out in the manner and proportions indicated by the following example, which will serve to show the proportions, but not, of course, the actual amounts which are treated at one time in the furnaces, the latter having, as we have said, a capacity of 25 tons.

A hundred pounds of steel scrap is placed in a crucible in the furnace and melted to a boiling-point of about 4,000 deg. F. When the boiling-point has been reached, from 1½ to 2½ pounds of ferrosilicon, containing 12 per cent silicon, is introduced into the molten metal. As soon as the ferrosilicon has melted, 2 to 8 ounces of ferromanganese, containing 80 per cent manganese, is mixed with 3 pounds or less of aluminium, and this mixture is introduced into the molten metal, where it quickly melts. After the resulting composition is thoroughly melted, it is tapped into ladles, carried to the various flasks and poured into the molds.

Although the excellence of Jupiter steel castings is, of course, mainly dependent upon the composition and the furnace treatment as above described, particular care is taken in the preparation of the molds. The molding sand is composed of a sharp silica sand, crushed rock, fireclay and molasses, which are mixed in the following proportions: Sixteen shovelfuls of hard silica sand, 4 of crushed rock, 1 of fireclay, and 1½ pints of molasses water, the molasses being diluted with water in the proportion of one to one. The molasses is used to give a bonding effect to the sand during the molding, while the fireclay serves the same purpose during the pouring of the hot metal. After the pattern has been drawn from the mold the latter is carefully dressed up and the finished surfaces are treated with a wash consisting of 99½ per cent of pure silica, ground fine and mixed with molasses water. The flasks containing the completed molds are placed in the baking furnaces, and are then ready for the pouring. The two 25-ton furnaces are utilized for the larger castings, and after the heat is ready

it is tapped off into ladles which vary in capacity from 10 to 25 tons. These ladles are handled by a pair of overhead, traveling, electric cranes, one of 30 tons, and the other of 20 tons capacity; they travel the full length of the foundry, which at present measures 130 feet in width by 200 feet in length. The building is being extended to a length of 300 feet, and an additional 15-ton crane will be installed. One of our illustrations shows the metal being tapped from the furnace into one of the larger ladles.

When the castings are cooled, they are cleaned by the sand blast, and then all the rough edges are carefully chipped down until the finished casting conforms perfectly to the original pattern furnished by the customer.

In tests recently carried out by the government this steel has shown a tensile strength of 67,300 pounds to the square inch and an elongation of 25 per cent in 8 inches, while in the bending tests a one-inch-square bar of this cast steel was bent cold through an arc of 93.5 deg. without fracture. As a result of these excellent qualities, Jupiter steel is finding a wonderfully wide range of usefulness in the industrial arts. Thus, the shipwork which is being done for the government and private shipbuilding firms includes the rams for the new United States battleships "Rhode Island" and "New Jersey," each of which castings will weigh 43 tons, and the stern frame, keel and sternpost for the same vessels. Other castings include horseshoes for marine engines, engine thrust bearings, knees, and many small parts ordinarily made of forged steel for the interior construction and fittings of ships, engine beds, engine cranks, cross-heads, gear wheels, etc. The castings for the battleships "Rhode Island" and "New Jersey" alone will equal in weight over a million pounds.

Niagara River Development.

Steps preparatory to the development of power on the Canadian side at Niagara are progressing with reasonable rapidity. Already a shaft 185 feet deep, 16 feet long and 10 feet wide has been sunk, and now comes the announcement that A. C. Douglass has been awarded the contract for constructing the tunnel that is to serve as a tail-race from the wheel-pit to the lower river. This new tunnel will be about 2,200 feet long and built in the form of a horseshoe, the same as the tunnel on the American side of the river, where the development of the Niagara Falls Power Company has become so notable. The section of the new tunnel, however, will be slightly larger than the tunnel now in use, the section of which is 21 feet high and 18 feet wide approximately. The new tunnel will be lined with brick, and it will discharge into the lower Niagara River a short distance below the Horseshoe Falls. The contract states the tunnel must be completed by January 1, 1903. The cost will be over half a million dollars. Work will progress night and day, and the method of construction will be similar to that employed in the construction of the present tunnel on the American side. Shifts of men will no doubt work toward each other from both ends. The tunnel on the American side is over 7,000 feet long, and it would seem from the shortness of the tunnel required on the Canadian side that it would not cost so much to develop power on that side. Contracts for the construction of the wheel-pit are to be awarded. The minimum capacity of this wheel-pit will be 100,000 horse power. The first section of the wheel-pit to be built will be about 250 feet long and 200 feet deep, having a capacity of 50,000 horse power. The electrical and hydraulic installation first to be installed will have an output capacity of 25,000 horse power. A supplemental agreement made between the commissioners of Victoria Park, in which the station is to be located, calls for the expenditure of \$1,500,000 within two years, but the Canadian Niagara Power Company is prepared to expend this sum quicker if it is possible in the development of the proposed power.

The officers of the Canadian Niagara Power Company are: President, William H. Beatty; vice-president and treasurer, William B. Rankine; secretary, A. Monro Grier; assistant secretary-treasurer, W. Paxton Little. Executive committee: William B. Rankine, William H. Beatty and Wallace Nesbitt.

A New System of Wireless Telegraphy.

A new system of wireless telegraphy has been devised by an English electrical engineer, Mr. Johnson, of London. It possesses several important features which should recommend its adoption, the most salient of which is the complete obviation of tapping the messages in transmission, which at present constitutes one of the principal disadvantages of Marconi's system. The Johnson device is entirely different to that of Marconi, though it can be applied to the latter's apparatus. High masts are entirely dispensed with. At present owing to the patent arrangements not having been quite completed but little information regarding the principle of the invention is given out, but it is understood to be devised somewhat upon the same principle as a stringed musical instrument.

The transmitting apparatus comprises chiefly a battery and induction coil, to which is attached a disk which may be adjusted to revolve at any desired speed, which revolves, and which is fitted at the edge with a number of vibrating reeds. The receivers, of which there are two, contain a series of tuning forks capable of being modified to any number of oscillations. The receivers are joined together by means of a wire. The disk of the apparatus is also capable of adjustment to any number of vibrations. The electric waves are transmitted at a certain number of vibrations. The tuning fork arrangement in the receiver is attuned to the same number of vibrations, so that the message during its passage through the air, although it may come into contact with other receivers, unless they are synchronized with the transmitting apparatus, will have no influence upon the waves. The system has been experimented over a distance of three miles with perfect success, but owing to the invention being only in its initial stage it has not been subjected to any severe tests. An experimental station is to be set up at the Earl's Court Exhibition in London and a graphic illustration rendered of its possibilities. The inventor states, however, that he can transmit the messages over the same distances that have been covered by Marconi. The question that arises is what is the range of tuning? Mr. Johnson states that he can produce over 30,000 vibrations per second with a low voltage. The range of combination by this system is so vast that it would be almost impossible to tap the messages. The British Admiralty have submitted the invention to a severe test, and the experts who carried out the examination are stated to be favorably impressed with the invention. It is stated that a trial is to be made with the apparatus by installing the system upon four battleships. It will then be possible to ascertain to what extent the vast amount of steel present upon a battleship, and the extensive range of electric appliances that are used, will interfere with the instruments, so that a conclusive idea of the utility of the invention may be gained.

Automobile News.

A titled automobilist was recently fined a pound for allowing his vehicle to emit steam while passing through the streets of a town.

An attempt has been made to introduce motor wagons on the African caravan route. Sixty were built especially for the work and have been abandoned.

An automobile took fire recently at Springfield, Mass., and the driver, with great presence of mind, ran the burning machine to the nearest fire house and asked the firemen to extinguish the flames. The firemen were quite surprised at having a fire brought to their doors.

One English contemporary, The Motor Car Journal, notes what might have been a serious accident to the motor car which runs between Bishop Auckland and Crook. As it was carrying a load of passengers it was upset by running into an obstruction which had been deliberately laid on the road. Fortunately no one was seriously injured. An examination of the roadway showed that a V-shaped wall had been built across it with stones from a neighboring pit heap, and this at a spot where there was a sloping bend in the road.

The French government has issued a decree settling the question of motor carriage speeds. The carriages are divided into two classes. First, those capable of a speed under 30 kilometers, and, second, those capable of a speed over 30 kilometers per hour. The latter must always carry in the front as well as in the rear, by night and day, a special number. The makers are required to make a declaration of the speed of every machine intended to travel on French roads. Racing on the high roads is forbidden, but in the open country a speed of 18 miles an hour will be allowed. Elsewhere the speed is limited to 12 miles per hour.

The automobile has been put to a novel use upon the Continent. M. Deutsch suggested that at bull fights the picador ride in an automobile, and the scheme was put into operation at Bayonne, September 29, but ended in a fiasco. The automobile was one of 12 horse power, and was all sheathed in with iron to prevent the bull from catching his horns in it. It was intended to have the picador stand on the seat of the car. The bull, however, did not care to come in contact with the strange looking vehicle and devoted his attention to the matador. Finally the bull was induced to make one onset and he struck the front wheel, coming in contact with the iron plate. One of the wheels of the automobile caught one of the hoofs of the bull, laming him. The crowd exclaimed in indignation at the loss of their sport, and the motor carriage had to be removed from the ring and the bull was killed in the ordinary way.