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Improvement in Gumming and Sharpening Saws.

One of the difficulties experienced by practical sawyers in the use of their saws is the trouble of keeping them in working order. A large portion—too large—of their time is expended in filing, gumming, or adjusting their saws. A handy, cheap, and portable contrivance for this purpose is certainly a desideratum. The one shown in the engravings contains all these requisites. It may be temporarily affixed to any bench, moved from one place to another, and is adapted to all sizes and styles of saws. The saw, whether circular or straight, can be presented to the gumming wheel at any angle.

Fig. 1 is a perspective view of the machine in position for operation; Fig. 2 shows the method of securing a straight saw to its bed in readiness to be operated upon by the emery wheel. Let A represent a table, or a section of a work bench, with a slot for receiving the standard of the saw support. The standard which holds the gummer or emery wheel and its appliances has a slotted bottom through which and the bench passes one or more bolts by which it is held in position, the slot allowing for lateral adjustment. The uprights, which have the journal boxes on their upper end, are secured to the shaft, B, allowing a swinging or rocking movement to the gummer, C, and its shaft, which is driven by a belt on the pulley, D. The gummer is advanced to the work by the lever, E, on the shaft of which is a cam, F, working against a stud on the inner side of one of the uprights. A spring, G, returns the gummer to place when the pressure on the lever, E, is withdrawn.

The foot of the saw support is pivoted or hinged to the base, H, both being held firmly to the bench by a bolt passing through the slot. This allows the saw to be set at an angle to the gummer. The saw is canted in the transverse direction by a joint and bolt, which permits teeth of any angle of edge to be adjusted to the gummer. Two screws, J, hold the bed of the saw in the position desired. The bed itself, is dove-tailed, and a corresponding sliding block fits the recess, and is held by a set screw. The bolt, which, with the flanges, K, hold the saw to the block, is small enough to fit the smallest eye, and larger eyes are fitted by means of properly sized thimbles. The stand, L, supports an adjustable rest to steady the edge of the saw on which the gummer is at work. The amount of forward and backward movement of the gummer frame is governed by thumb screws. Fig. 2 is a sliding rest for holding straight saws, its lower portion, N, being formed to fit the same bed as that which the block for holding the circular saw fits. The saw is held by the clamps, O, and adjusted to place by the stops, P. Small fans may be attached to the flanges which secure the gummer to the shaft, one on each side, to keep the teeth of the saw cool while being operated upon. A pan of ice on the bench under the gummer will serve to cool the air before it is taken up by the fans.

The operation of the machine may be readily understood from the foregoing detailed description and the engravings. It was patented April 2, 1867, by Thomas T. Markland, Jr. The machines will be furnished on application to J. B. Bartlett & Co., 248 South Eighth street, Philadelphia, Pa.; J. B. Bartlett & Sons, 924 Arch street, same city, or W. H. Miles, 117 John street, New York.

Improved Watch Case.

The actual wear of watch movements, apart from the presence of dirt, is very slight. A watch must be kept clean if good results are expected; but it has been found difficult to so construct a watch case that it will not, after being used a short time, admit not only moisture but particles of dust. The patentee of the improved watch case shown in the engravings, however, is confident of having constructed a case which is both

dust and water tight; and practical watch makers, including the celebrated American Watch Company of Waltham, Mass., indorse it as a valuable improvement.

As will be seen, it is a capped or hunting case made quite heavy. Inside the center or body portion, on which the back and cover close, fits a ring, A, having a thread cut on one edge of its exterior surface engaging with a corresponding thread

can Patent Agency, by S. D. Engle. The device is applicable to all styles of watches. Further information relative to the improvement may be obtained by addressing Messrs. Jacot & Brother, No. 9 South Second street, Philadelphia, Pa.

Dissolving Bones.

The importance of phosphates, such as common bones, as fertilizers, especially in grain culture, could hardly be extolled, and it would be presuming upon the intelligence of our farmers to say more than to recommend their application. There exists, however, some obstacles which yet prevent waste bones, nearly always cheap and within easy reach, from being generally used. The great distances in the far west, and other inconveniences, render their purchase in powder form expensive, and for grinding them at home, or dissolving in acid, there is still less chance.

Professor Nienhof, in Russia, has, however, lately discovered a method for dissolving them, which must prove highly economical and suitable in unsettled countries, where, owing to the great abundance of forests, wood ashes are cheaply secured—indeed, are almost always ready at hand. This new process of treating bones consists of mixing them with wood ashes and slaked caustic lime, and keeping the mixture constantly moist. As in the preparation of lye for manufacturing soap, the alkaline carbonates in the ashes, such as carbonate of potassa, are by the action of caustic lime converted into free caustic potassa, attacking and quickly dissolving the bones.

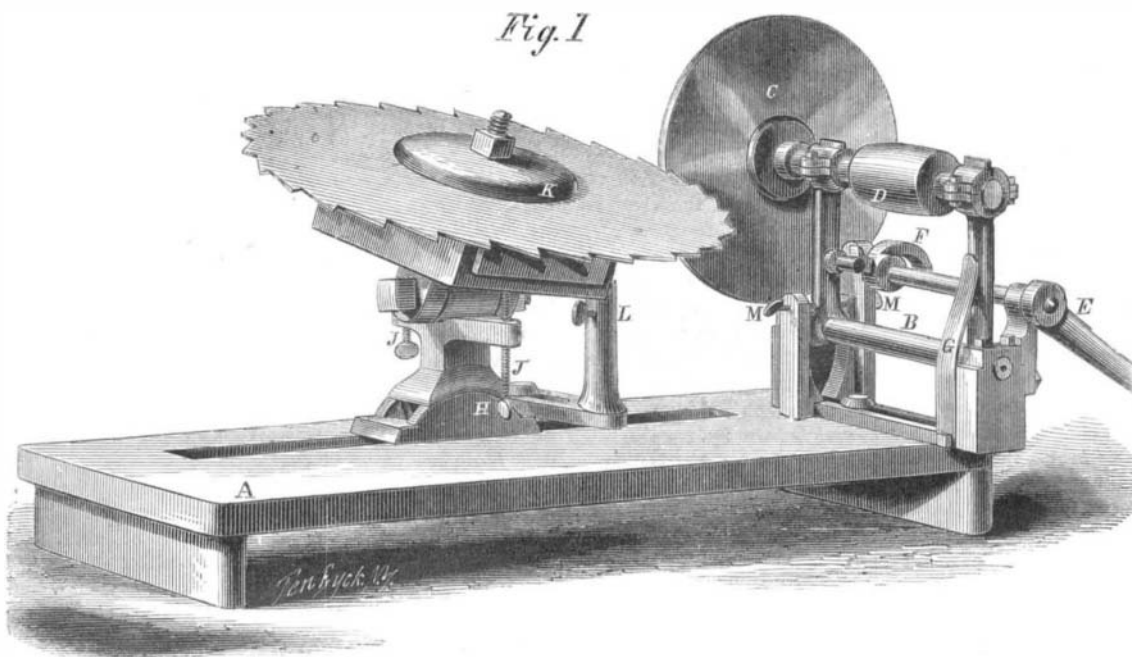
The following practical example will illustrate the necessary proceeding. Suppose the wood ashes to contain about 10 per cent carbonate of potassa, and that 4,000 pounds of bones are to be worked up; then we take 4,000 pounds of ashes, 600 pounds of caustic lime, and 400 to 500 pounds of water. A ditch, some two feet deep, of such width and length as to hold 8,000 pounds of the mixture, is dug, and near it a second ditch, being some 25 per cent larger, and both lined with boards. The lime is then slaked, and, when crumbled to a powder, mingled with the wood ashes; and 2,000 pounds of bones piled up in layers, and covered up with the mass in the smaller ditch; 3,600 pounds of water added, and the whole left to itself. From time to time small quantities of water are added, to keep the mass moist. As soon as it is found that the bones are so far decomposed that when pressed between the fingers they are soft and crumble, the second portion—i.e., the other 2,000 pounds of bones—is brought into the larger ditch, and covered in layers with the first mass, and left to decompose.

After the whole mass has undergone decomposition it is suffered to dry, by removing it; and, lastly, to facilitate its reduction to powder, mixed with 4,000 pounds of dry turf, or some other dry vegetable earth. The mixture is repeatedly stirred about with a shovel and may at once be brought upon the fields. Manure prepared thus will contain about 12 per cent of tribasic phosphate of lime (3 CaO, PO₅), 2 per cent of nitrogenous matter. This manure must, from its composition, produce an admirable effect upon grape vines. Liebig, in generally recommending this new fertilizer, thinks an addition of gypsum an improvement for many kinds of fruits.—*Agricultural Report.*

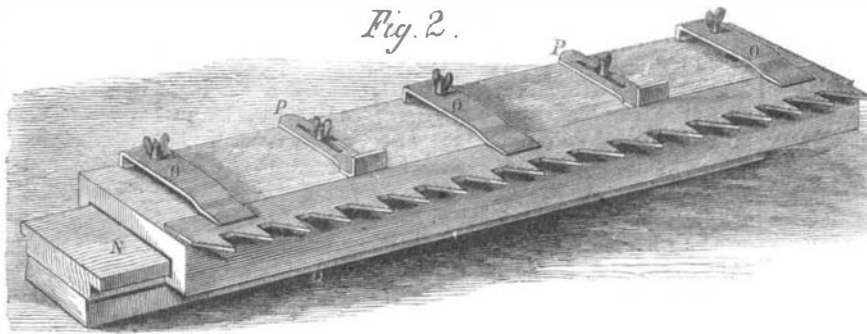
Sheep Wash.

Tobacco juice has long been employed with success as a wash for sheep to keep them clear of vermin. What a pity that the wasted excretions of tobacco chewers could not in some way be economized. The liquid saved would be more than sufficient to swim all the sheep in the world. Edward B. Booth, of St. Louis, Mo., has lately patented a sheep wash as follows:

"The object of my invention is to produce a liquid com-



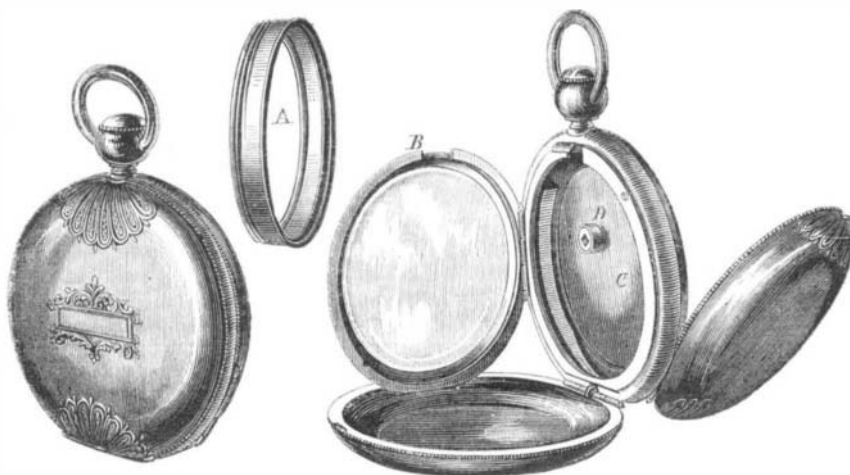
MARKLAND'S PATENT ADJUSTABLE SAW GUMMER



case for the movement, in addition to the center, back, and cover, forming the outer case. The cap, C, has a box or tube, D, surrounding the key hole, and embracing the fusee arbor, inside of which tube is placed a packing of soft chamois skin, or other suitable substance, rendering the whole impervious to all foreign substances.

The inventor states that he immersed a watch, inclosed in

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ENGLE'S PATENT AIR TIGHT WATCH CASE.

one of these cases, in water over night without any damage to the movement, and that watches provided with the improved case are eminently fitted for persons employed about engines—stationary, fire, or locomotive—in mines, flour mills, etc. The patent was obtained through the Scientific Ameri-

found that will keep the skin of sheep in a healthy condition free them from scab and vermin, and keep the wool clear of vermin.

"I take 100 pounds of tobacco, refuse, stems, etc., and boil it in 50 gallons of water long enough to produce 40 gallons of the extract of tobacco, which will be from one to six hours, according to the degree of heat and strength of the tobacco. While the liquid is hot I add to it gradually common pulverized chalk, till effervescence ceases. Then, when this mixture is cool, I add 1 gallon of tersulphide of calcium, prepared in the usual way, and mix thoroughly.

"When the compound is to be applied, one pint must be diluted with one gallon of water, and then the sheep washed with or immersed in it. This is equally efficacious when applied to cattle and other animals."

EDITORIAL CORRESPONDENCE.

Passports in France—The Antiquities of Nimes—Pont du Gard—Avignon—Papal Palaces—Laura's Grave—Hercules and the Ligurians—Marseilles to Nice—A Trip over the Corniche Road—From Geneva to Spezia—A Magnificent Sight.

SPEZIA, Jan. 9th, 1868.

On quitting Spain we spent our first night in France at Perpignan, a dull, ancient, strongly fortified city, not far from the frontier. For some unexplained reason when we alighted from the diligence, where we had been "cribbed, cabined, and confined" for ten hours, an officer approached and civilly asked for our passports, and in the morning, as we were about to take the train for Nimes, we were again requested to produce them; but the officer took our word that we were traveling Americans, and permitted us to go about our business. It should be understood that France professes to have dispensed with the passport system, therefore it appeared to us singular that we could not come and go to and from old Perpignan without passports. We surmised that this excessive vigilance was occasioned by some convention between Spain and France, to prevent the escape of those Spaniards who were concerned in the revolution that broke out last spring in the province of Catalonia, a province bordering this portion of France. Francis Arago, the celebrated astronomer, was born in a small town near Perpignan, and for many years was a representative in the French Assembly.

Our journey led us through the old city of Narbonne, which boasts of Roman antiquity, but is now chiefly celebrated for its industrious bees, who gather a highly aromatic honey from a disconsolate looking heath in the vicinity. This whole region, however, has a mournful, bloody interest connected with the heretical Albigenses, who were cruelly put to death in answer to the call of the Church of Rome. The historian asserts that 60,000 were massacred, but the inhuman abbot declared in a letter to Innocent III. that he could only slay 20,000. "Kill all," said he; "the Lord will recognize his own." Here the vine is extensively cultivated, and some exquisite qualities of wine are produced, such as the sparkling St. Peray, which is made from the natural juice of a sweet grape, and accounted to be more wholesome than the common sweetened champagne. "The nearer the bone the sweeter the meat." So it is here in these wine producing districts—the rougher the soil the sweeter the wine. Throughout this section there are also numerous unwholesome lagoons of salt water, from which an immense quantity of salt is produced by solar evaporation.

Nimes is one of the oldest and most interesting cities in France, and abounds in remarkable and well preserved Roman remains and antiquities. The old city has narrow, ill-regulated streets or lanes, but in the newer portions the streets are broad avenues. Beside, there are fine parks, gardens and promenades, well shaded and well kept. I think, on the whole, that it is one of the prettiest cities in France—a spot where the weary traveler might comfortably stop to rest for a few days to repair damages, and recruit for a trip towards Italy. There are upwards of a hundred distilleries in Nimes, but the people appear to be sober and industrious. It is not known who founded the Amphitheater, but it is said to be much better preserved externally than the Coliseum at Rome. The building is oval-shaped, seventy feet high, with double row of arcades or galleries, sixty on each story, the lower ones serving as so many entrances to the arena and galleries. It is probable that 20,000 spectators could be accommodated, as there are thirty-two tiers of stone seats rising one above the other. Recent excavations have led to the discovery of a sub-arena, which is supposed to have contained an artificial forest of trees, which were elevated during the time when animals were fought in the presence of the Roman Emperor and on other great occasions.

The guide who conducts visitors through the building assured us that this was the idea which archæologists entertained respecting the sub-arena. It might just as well be that as anything else. A few workmen are kept employed in repairing such portions of the Amphitheater as threaten ruin, and some restorations have been successfully carried out. The arena is now used for very innocent French bull fights, which differ from those in Spain in this, that French bull fights are perfectly bloodless exhibitions, as the law does not permit any wounding of the animal; they simply tease and annoy him.

Here is also to be seen a little Corinthian temple, a beautiful and well preserved specimen of architecture—a miniature of the splendid Church of the Madeleine in Paris. At one time this temple was degraded to the purposes of a horse stable, but it is now used as a museum for antiquities found in the neighborhood, and some pictures, one of which, the master-piece of Delaroche, represents Cromwell lifting the lid of Charles I.'s coffin, and looking at his headless corpse. The well preserved, double-arched Porte of Augustus, which

now serves as the entrance to a stable yard, was erected sixteen years before Christ. Within the enclosure of a fine Public Garden are to be seen the Roman baths of Augustus, also the ruins of the Temple of Diana. During the progress of the excavation of the baths, a large Corinthian column, with a finely cut capital, was unearthed, and within the temple there are some splendid pieces of sculpture in marble, statues, and bas-reliefs. During the past summer a laborer working about the roots of a rose bush, dug up a curious bas-relief, nicely chiseled, which represents "Old Father Time" discovering truth. In his wanderings about this world of care, Father Time, on one occasion, came across a man having three children, and was naturally curious to know whence they originated. Upon lifting a robe, or veil, he discovered a beautiful female figure concealed beneath its folds, and thus maternity was fully revealed. And thus it is that sooner or later time discovers truth. Upon a hill rising high above the garden, there is a singular tower, dismantled and broken. For what purpose was this high pile of stone erected? Some wise ones say it might have been a light house, but it being fifty miles from the sea, this hypothesis is not a supposable one. Some miserly gardener imagined that it might contain a rich treasure, but after considerable digging and searching, nothing was found, and to this day the old tower stands on the hill-top, a curiosity for the curious. Perhaps "Old Father Time" may sometime aid the discovery of the truth in this case.

Ancient Nimes was supplied with water brought through an aqueduct a distance of twenty-five miles. A carriage drive of two hours, on the high road to Avignon, and a little turn up the valley of the river Gardon, brings you to "Pont du Gard," one of those grand, cyclopean structures for which the Romans were so famous. It consists in a range of triple arches, one rising above the other. In the lower range are six grand arches, spanning the river bed. The middle range has eleven arches. The top range has thirty-five, over which passes the U-shaped canal, carefully cemented and covered by flat stone, and large enough to admit the easy passage of an ordinary sized man. It is said that the Romans were ignorant of the hydrostatic law that water confined in a tube rises to the level of its source, therefore they incurred the enormous expense of building open aqueducts. The broken remains of this structure are visible for miles from where it crosses the Gardon, and the cement used for the lining is as hard as the granite rock itself. The aqueduct bridge has an elevation of 160 feet, and a length of 886, and is more grand for its severe simplicity, being constructed of heavy, granite blocks, wholly destitute of ornament. This Roman structure is in a wonderful state of preservation, and is now undergoing some repairs for the purpose of once more returning to its original duty of carrying water to Nimes. It has stood in its present solitude for nearly two thousand years, during which time sixty-six generations of living men have come and gone, kingdoms have risen, flourished and been destroyed,—indeed, how many strange thoughts and associations crowd upon the mind when one gazes for the first time upon structures raised by human hands, and which had a place upon the earth before our Saviour came to seek and to save that which was lost.

There are evidences that the river Gardon was at one time six feet at least higher than at present, and that the beautiful valley, dotted with towns and villas, which opens below the rocky heights of Pont du Gard, was once wholly submerged; for at the base of the rocks, above the carriage road, are extensive caves worn out by the action of the waters. The jolly hermit who has a comfortable dwelling place for himself and little dog in one of the smaller caves, informed us that upon the annual feast of the Pentecost the pious villagers from La Foux come there to dance in the grand cave.

Avignon is a place of great historical interest, and I imagine that at the right time in the year it might be an agreeable spot to spend a few days, in rummaging about amid the rubbish of old papal palaces and Roman antiquities, which abound in and around the old, weather-beaten city; but we chanced to visit it when the *mistral* was blowing violently, which chilled all our zeal for the dead past, and compelled us to think more of the present. The *mistral*, at certain seasons, is the scourge of this section. It blows about three months in the year, and is bitterly cold, drying, and painful. Indeed, it requires a great stretch of the imagination to discover either poetry, romance, or beauty in this portion of "sunny France," although in the brains of some people it is esteemed as a sort of Paradise.

The Popes once lived and reigned, temporally and spiritually, at Avignon, after being driven out of Rome by the Prince Colonna, in the days of Gregory VI. The old palace, now used as a barrack for soldiers, still exists, and is altogether one of the ugliest structures in Europe. It has a long history of luxury, profligacy, tyranny, and blood, beginning in the 14th century and ending in 1791, when scores of innocent men and women fell victims to the infuriated French revolutionists, whose horrid crimes and butcheries are unmatched in the world's history, since Christianity came to bless mankind. Three usurpers of the papal authority, Clement VII., Benedict XIII., and Clement VIII., once occupied the old palace, and the good inhabitants of Avignon are even now indulging the hope that Pius IX. may decide to get away from his present annoying situation, and come to the old papal home. There is a marked difference between the church architecture of Spain and France. The former is grand, impressive, and very magnificent. The latter is usually gloomy, mean, and very unimpressive.

We could not quit Avignon without visiting the grave of Petrarch's Laura, within the enclosure of the old Museum, and over which some sentimental Englishman has placed a rustic marble cross.

The Paris and Mediterranean railway passes through Avignon, and Marseilles is reached in about three hours. Between the two cities the road runs through "Campus Lapideus," a plain of thousands of acres, covered with a mass of round pebbles. This is the spot, according to tradition, where Hercules fought the Ligurians. Having exhausted his arrows, Jupiter sent for his use a shower of stones. Some critic, however, has endeavored to spoil the story by saying that if Jupiter really intended to assist the son of Jove, he could have done so more effectually by showering the stones upon the heads of the Ligurians.

Just before reaching Marseilles, the railway passes through a tunnel three miles long, emerging from which the Mediterranean appears in view. Marseilles is a very enterprising, commercial city, but I must confess a dislike to commercial cities in Europe. They have a rough, business element about them, which shows itself in heavy trucks, carts, and other appliances of an active commerce, which jostles the romance of travel, especially after one has been buried for a time amid the antiquities of Spain, Nimes, and Avignon. Still, I feel bound to say that the city of Marseilles exceeded my preconceived notions. Its newer streets are usually broad and elegant, and in all Europe there is not another city which can boast of a drive to be compared with that along the Prado, through the Park and over the little Corniche, which rises above the Mediterranean and extends for three miles along the rocky face of the coast, until it reaches the noble harbor filled with vessels. The combination is very grand, and the view exceedingly fine, but travelers dislike long stays in a business place, and therefore from this point rush off to Nice, about six hours' ride by rail, where humanity in its varied forms of wasting disease and robust health, congregate. England, France, Russia, and ubiquitous America, all have their representatives, who eat, drink, sleep, dance, and sun, and declare that it is Elysium—though not exactly the heaven of the heathen. I confess that I like Nice. It is a sunny spot, happily situated upon the Mediterranean and sheltered on the land side by the Alps Maritime, which carries the rough *mistral* over head and into the sea, where it often lifts the water, and blows it about the surface like snow dancing upon the ice.

A few days spent in Nice only sharpens the desire to press on towards Italy, and the question arises by what way shall the trip be made? A tolerable steamer enables you to reach Genoa in about nine hours if the weather be good, but to go in that way one misses the famous "Corniche Road," to do which will require the best part of four days; but then it offers great advantages over the trip by sea, as it is unquestionably one of the grandest things to be seen in Europe. We decided in favor of the road, and having bargained with an Italian *Vetturini*, who had just come through from Genoa, we left Nice at noon and soon found ourselves slowly wending our way by zig zags up the sides of the mountains, having always in full view upon one side the snowy peaks of the Maritime Alps, and beneath, unrivalled Nice, with its surrounding olive groves and the Mediterranean stretching beyond the setting sun. Having gained the top of the mountain, we obtained a view of the picturesque village of Turbia, with its Roman ruins perched, like an eagle's nest, upon a ledge of rocks, and, thousands of feet below, upon a sharp promontory, jutting out into the sea, the famous little Principality of Monaco, resembling one of those modeled cities which are often seen in museums.

This miniature spot is a sort of political excrescence upon the rocky headlands of France, and is entitled to the position it holds as the smallest independency in Europe. The Prince of Monaco claims his title by a long hereditary line reaching back to the tenth century, and although the town contains but 1,500 souls, the Prince has his grand palace, and is well well protected by fortifications of no mean pretensions. His Highness' chief source of income is derived from a gambling saloon, where fashionable gentlemen can go down twice a day from Nice to try their fortunes at *roulette* and *rouge et noir*; the boat returning as late as eleven o'clock at night, which enables them to make a long and usually very unprofitable day of it. I have heard it remarked that guests stopping at the hotel at Monaco are sometimes, in a polite way, informed that their room is considered better than their company if they do not patronize the games so graciously instituted for their benefit.

We passed our first night on the "Corniche" at Mentone, another of those very pleasant Mediterranean health ports, where invalids put in for balmy air and cheerful sunshine which are denied them in northern latitudes. The whole coast from Nice to Genoa is a succession of bold, rocky headlands, with intervening valleys and very picturesque old towns, the road being often cut in galleries along the side of the solid rock, sometimes running through tunnels under mountains, again across valleys, in full view of the sea, presenting to the traveler a constant and ever varying panorama of grand scenery; and what increases the interest very much, is the truly wonderful piece of railway engineering which was begun some years ago for the purpose of bringing Nice and Genoa nearer together.

The distance is 122 miles, and some idea may be formed of the magnitude of the work when it is known that there are upwards of 150 tunnels already made through the solid rock, besides many miles of causeway along the borders of the sea, protected by revetment walls to prevent washing. Some of the tunnels have caved in, and although millions have already been expended, the work seems to have stopped.

The Corniche road runs through the outskirts of the village of Bordighera, the spot where Ruffini has laid the scene of his story of Dr. Antonio—a most charming tale—which has added very much to the interest of this Riviera Province. Here the palm is extensively cultivated, and since the days of