

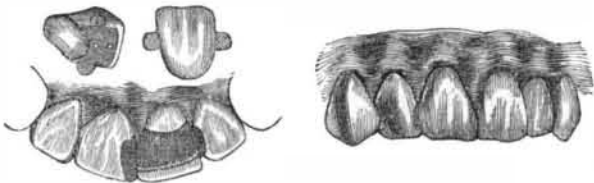
[Dental Cosmos.]

A Device in Dentistry.

The insertion of a porcelain tooth without a plate or clasps, and where no root remains, and where the remaining teeth are firm in their sockets, may be considered permanent when inserted as here illustrated. About two years ago an operation somewhat of this character was described in the *Dental Cosmos* by Dr. B. J. Bing, then practicing in Paris, now in London.

A patient who disliked the wearing of a plate, and desired something different, presented, when the operation now to be described was decided upon and performed. After forming appropriate cavities in the proximate surfaces of the teeth next the space left from the loss of the natural tooth, an impression was taken and a plain porcelain tooth selected, fitted to the parts and backed with gold, a portion of the backing extending from each side about one and a half lines, for insertion into the cavities prepared for them in the adjoining teeth. A small gold plate was then formed to fit upon the gum, covering as much of it as would embrace the neck of the natural tooth were it in position. The backing when riveted to the porcelain was then adapted to the position in which it was to be placed; and while the whole rested on the small plate upon the gum, the backing and plate were so secured by a cement that they could be removed intact, and, after the usual preparation, soldered. The surface of the extended sides of the backing was roughened, so that the gold would better secure them when filled into every part.

This being done, a thin piece of rubber coffer dam was placed on the adjoining teeth and over the gum upon which the porcelain, with the gold attachments, was to rest. The rubber occupies but little space, and, when ligated to the teeth adjoining, so presses up the gum that its thickness is more than compensated for. The porcelain, with its attachments, was then placed in position, and secured firmly by the solid impactation of small pieces of light cohesive gold foil around that portion of the plate extending into the cavities.



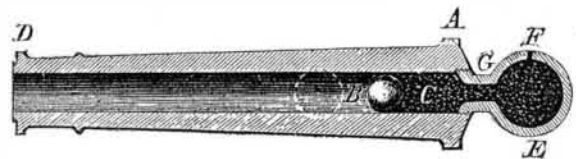
The parts when in position appear as here illustrated, the gold backing and fillings showing plainly on the palatine surface, while on the labial no gold is exposed to view, excepting a small portion of the filling in the lateral incisor. The porcelain and gold attachments as prepared for insertion are also shown. It will be seen that the cavity in the central incisor was formed to the cutting edge of the tooth. This was done to gain access to both sides of the plate extended into the cavity, which could not otherwise be done unless a portion of the labial surface were cut away, which would have been objectionable in consequence of the exposure of gold. In the lateral incisor this was deemed necessary, because, being smaller than the other, it was thought best not to cut it away in the same manner. It was so arranged, however, that though the filling can be seen, it is not conspicuous.

A Curiosity of Old Times.

In the *Mechanic's Magazine* of January, 1824, we find the following curious communication:

PROPOSAL FOR INCREASING THE STRENGTH OF GUNPOWDER.

A D is a longitudinal section of a great gun; C, the cartridge; B, the ball; E, a hollow metal sphere, similar to a



bombshell or hand grenade, with a hollow neck or tube, G, which screws into the breech of the gun; F, the touch hole.

The design is that the ignited powder in the shell shall throw a quantity of flame suddenly into the gun, and explode every grain of the cartridge powder. It is not, however, meant that preventing any of the powder from being blown out unignited is to give the additional force; on the contrary, it is certain that the expansive power of explosive mixtures is as the quantity of flame suddenly formed by them, particularly in confined situations, where the flame is supplied with matter from the combustible substance itself only. In proof of this, let flame be communicated to the powder of a charged gun, by firing a pistol containing powder only into its touch hole, and the result will be found to be, that the momentum of the ball from the gun will be much greater than if the same quantity of powder as that fired from the pistol had been added to the cartridge in the gun, and the whole exploded in the customary manner. This I ascertained by experiment nearly ten years since. The thing is now put beyond all manner of doubt, from the discharge of guns being effected by detonating copper caps. Sportsmen, using the same, declare that a less quantity of powder produces an equal effect to a greater quantity without these caps. It may be necessary to add, that trials are indispensable to ascertain the maximum of the size of the shell, E, and of the quantity of powder it should contain to be safe and most efficient.

Query.—Might not the guns of forts be constructed so as to slide backwards and forwards on fixed but centered carriages, by which much fatigue would be avoided by the men?
Chatham. J. H. PASLEY.

THE MECHANICAL PIGEON.

To attain dexterity in the shooting of birds upon the wing, it has been the practice of sportsmen to make use of live pigeons, which are placed in suitable cages, from which, by a string, they are liberated at the desired moment, to be needlessly shot down by the gunner. The great cruelty of this sport has led to the invention of what is termed the mechanical pigeon, the construction and operation of which is illustrated in the accompanying engravings.

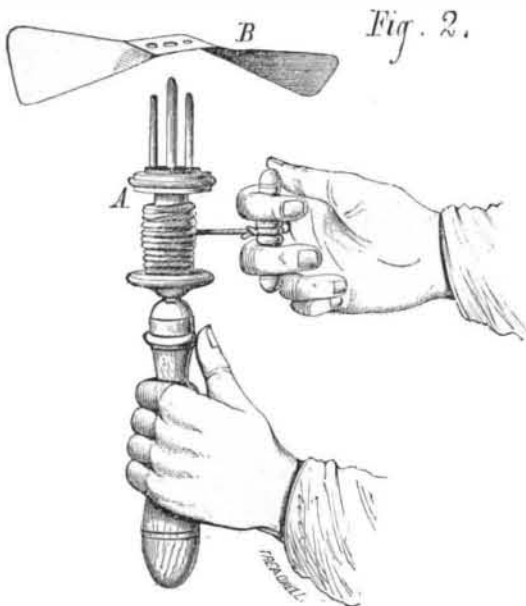


The mechanical pigeon consists of a thin strip of sheet iron, six inches or more in length, having wings bent somewhat like the blades of a screw propeller, as shown at D, Fig. 1. When rapid rotation is given to this propeller, it rises high in the air, the wings are seen to flicker or vibrate, and its whole appearance resembles a flying bird.

To effect the aerial flight of the mechanical pigeon, two methods are employed. One of these, shown in Fig. 2, consists of a spool, A, mounted on a handle, the spool being turned with great rapidity by the application of force to the cord, as shown. Upon the forks of the spool the pigeon is centered, and, when a proper rotating velocity is communicated, away it sails into the air, like a bird upon the wing.

A self-acting spool for setting off the pigeon is shown in Fig. 1. This consists of a barrel, A, containing a strong spring, which is liberated at the proper instant, by means of the cord and trigger, B. The power of the spring, when the cord is pulled, gives instantaneous rotation to the forks, and sends the "pigeon" into the air, in the manner previously described. This spring spool is attached to a ball and socket head arranged upon a spike which is set in the ground wherever desired. The cord leads to the position occupied by the sportsmen, which may be at some distance from the machine, as shown in Fig. 3.

When the trigger is pulled, the mechanical pigeon flies and



the sportsman fires, thus enjoying the best of gunnery practice without cruelty to innocent birds. If a shot strikes the

mechanical pigeon, its direction is changed, and it falls to the ground. This contrivance has become an extensive article of sporting merchandize.—*Science Record for 1873.*

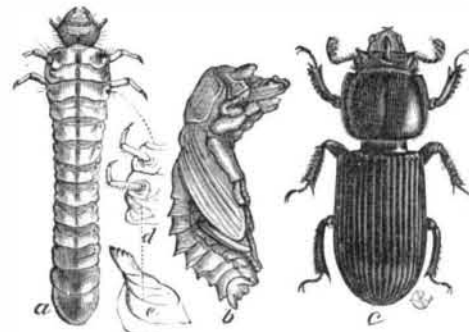
[From the Fourth Annual Report of Charles V. Riley, State Entomologist of Missouri.]

THE COMMON BEETLE.

Many an one will doubtless recognize, in the insect illustrated herewith, the bug with which he or she, as a child, was wont to play at "oxen," the curved horn on the head forming such an inviting projection on which to hitch, by means of a thread, small chips and other diminutive objects, to be dragged by the rather awkward beast of burden. Every pioneer in this Western country, as he rolled over huge decayed logs, in the work of clearing his land to make it ready for the plow, must have become familiar with this highly polished coal-black beetle. Every woodsman who has split or grubbed an old stump will be likely to recognize in this horned bug an old acquaintance. Every entomologist who has dug into or pulled to pieces old rotting stumps, in search for other treasures, must time and again have seen this lazy, clumsy *passalus* tumbling down with the loose and crumbling dust and excreta of its own making, and expressing its disapproval of such summary disturbance, in the plainest manner, by emitting a peculiar half hissing, half creaking noise. And though met with at almost every step in his forest rambles,

Where wild birds sing beneath the leafy bowers,

the inquisitive student has no doubt found himself repeatedly examining specimens, not only to admire the elegance and beauty of form, but to ascertain the means by which the peculiar noise is produced. A sufficiently careful examination



The Horned *Passalus*—*Passalus cornutus*, Fabr. (Coleoptera, Lucanidae.)

will end in the knowledge that it is caused by the rubbing of the rather horny terminal joints of the abdomen, known as the *pygidium*, against the inside of the hard wing covers.

This insect cannot be considered injurious in any sense of the word, and might with propriety be introduced in the section of "Beneficial Insects." It is never found in sound or green wood, but invariably in that which is decaying, and it very materially assists and hastens the reduction of stumps which might otherwise remain treble the length of time, to occupy valuable ground and serve as an eye sore to the careful farmer in wooded countries. Unseen and unheard it carries on incessantly the good work of converting useless timber into mold which enriches the soil; and this has been its office in all the past ages of its existence. A decaying, moist condition of the wood is necessary to its development, and it will be found most common on low moist ground, and in oak, hickory, and sweet gum logs or stumps.

Common as is this beetle, its larva and pupa are rarely seen, and seem to be unknown even to most entomologists, while no good figures of them have been published.

The larva, *a*, is of a very exceptional character, being the only one in this country which possesses but four well developed legs, for though many butterflies in the imago state have the front pair functionally impotent, no other insect than our *passalus* exhibits a similar feature in the larva state. Indeed the only other larvæ in the whole class of insects which are similarly characterized are those belonging to the same genus in other parts of the world. The third pair of legs really exists, however, in a rudimentary state, as shown at *d*. This larva is of a bluish white color with the anterior joints broader and flatter than the rest. It transforms in the fall of the year, within the wood it inhabits, to a whitish pupa, *b*, in which the front pair of legs is thrown forward under the head, and the horns of the future beetle show plainly on its top. The pupa lasts but about a fortnight, when, throwing off the pupa garb, it becomes a perfect beetle. At first the parts are all beautifully white and delicate; then the head, thorax, and limbs gradually become amber brown, and lastly the wing covers assume this color. The whole body then deepens very gradually so that many days elapse before the coal black color is acquired; and in the month of August the beetle is as often found brown as black. As larvæ only half grown are found in company with those that are full grown, they require at least two years to mature.

Progress of Plated Ware Manufactures

By many the plated goods are preferred, not only on account of the difference in cost, but because the design and appearance of the goods are nearly identical with the solid ware. The Meriden Britannia Company confine their attention mainly to the manufacture of nickel silver and white metal silver plated goods. The company was established in 1852, at West Meriden, Conn., where they now occupy five acres of ground, and have eight factories, the largest of which is seven hundred feet long, presenting an imposing appearance. The capital invested is more than \$2,000,000 and the capacity of the works about \$4,000,000 yearly. The company employ 700 men.