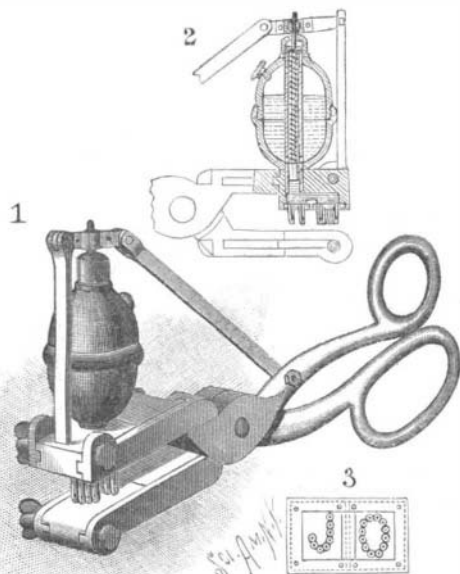


way to a barbed-wire fence, passing under it himself but witnessing the complete demoralization of the hunt as he bounded away.

While the coyote hunts singly in towns or villages, he runs in packs in the open, and it is here that he demonstrates his skill and cunning. A friend of mine observed a pack of coyotes on the edge of the desert manipulating a jack rabbit. They swept across the country in a line, soon starting a hare, then formed in two parallel lines about 200 feet apart. There was a regular plan of action, and none of the coyotes seemed over-excited, but when the hare was started they wheeled into columns like soldiers, the leading coyote running at the top of his speed. After a few moments he dropped to the rear and a fresh coyote took the lead; and this was kept up until the hare was run down.



CAMERON'S BRANDING INSTRUMENT.

The chase was a silent one. This method recalls the wild dogs of Australia, or dingo.

While the coyote is invariably written down as a coward, and it is true that either singly or in packs he will not attack man or beast larger than himself, when cornered he is a vicious fighter. I have seen one fight off a pack of greyhounds, wounding them so that to save the dogs the hunter was obliged to finish the animal. The coyote in this case had run at least two miles at race-horse speed, and when reached by the hunters was backed up against a rock, snapping his jaws at his crazed antagonist, his teeth sounding like a steel trap as they came together, and taking a piece of flesh whenever they hit the mark.

Seven or eight years ago Southern and Central California abounded in coyotes to a certain extent annoyed the rancher. A sentiment was gradually worked up against the animal, so successfully, indeed, that the State legislature passed an anti-coyote act, putting a price upon his head or scalp. I had the temerity to oppose this and at the time made several appeals for the animal through local papers and The San Francisco Chronicle, pointing out the reasons. I was evidently in the minority, but time has shown the fallacy of killing all the coyotes, and the act, which bade fair to bankrupt the State, was repealed, and the coyote is once more increasing, though it will be years before he will make the welkin ring as of yore. My argument, especially applied to the localities mentioned, was that as the coyote was the only enemy of the jack rabbit and ground squirrel, his destruction by wholesale would result in a vast increase of rabbits and squirrels. I also pointed out that a scalp bounty in California would open up frauds innumerable, and that coyotes would be exterminated in California, then imported from Arizona, New Mexico and Utah; and this was the case. Coyote killing became so profitable a business that many men devoted themselves to it, and an increase in the pests, jack rabbits and ground squirrels was soon noticed; the law was repealed, but not before the taxpayers of California were looted to a large amount.

The jack rabbit, a famous girdler of young trees and an all-around enemy to the agriculturist, without a redeeming feature, is the natural food of the coyote, which does not disdain the ground squirrel. The coyote is also a snake eater, even attacking the rattlesnake; in a word, he is a valuable scavenger and an animal to be preserved. It is true he has a weakness for turkeys and chickens, and sometimes dines upon small lambs on the edge of large flocks, yet the losses are inconsiderable compared to the ravages the rabbits are guilty of in the San Joaquin and San Gabriel valleys and which they would accomplish if not kept down by the coyote.

Don Coyote can be tamed, and I knew of one instance where a herder kept one that was apparently as tame as a dog. The near allies of the coyote are the maikongs or crab-eating dogs of South America, that hunt in packs and resemble

the coyote in appearance. There are several species in South America that call to mind the coyote, as the Guara Canis jubatus, a large, powerful, ferocious dog-wolf five feet in length. Like the coyote, it frequents the lowland countries, especially in Paraguay.

#### AN IMPROVED BRANDING INSTRUMENT.

Our illustrations represent an improved device for branding and marking the ears of animals and simultaneously injecting an indelible fluid into the wound. The device has been patented by Walter A. Cameron, Stacey, Mont.

Fig. 1 is a perspective view of the complete instrument; Fig. 2 is a partial section; and Fig. 3 is a cross-section taken just above the marking devices.

The branding instrument consists of two levers pivoted together and provided with jaws. On the lower jaw a soft metal impression block is secured; and on the upper jaw a block is carried, having a chamber communicating by means of a tube with a reservoir containing the indelible fluid. The tube incloses a plunger operated from the upper lever and is provided with lateral ports at its upper and lower ends. The lower ports permit the liquid to flow into the chambered block when the plunger is raised; and the upper ports permit the liquid above the plunger to be forced back into the reservoir.

Symbol-carrying plates (Fig. 3) are removably secured to the chambered block. The symbols consist of letters, figures, or other characters, and are formed of tubular pins.

In using the instrument, the levers are operated to separate the jaws. By reason of this motion, the plunger will be drawn upward to permit the liquid from the reservoir to flow into the chamber. After placing the impression block carried by the lower jaw against the outer side of the animal's ear, the levers are operated to force the tubular pins into the ear, thereby causing the plunger to inject liquid into the wound.

A spring within the tube holds the plunger normally below the lower ports, so that the liquid will not escape when the device is not in use.

#### A SIMPLE SLIDE-VALVE FOR STEAM-ENGINES.

The improved slide valve which forms the subject of our engravings consists of two parts, a distributing valve, *A*, and an independently movable section, *B*, interposed between the ports of the cylinder and the distributing-valve, *A*. The distributing-valve is independently adjusted by a stem, *J*, passing through a sleeve, *K*, connected with the slide-section, *B*, and with the eccentric. The sleeve, *K*, is offset in the form of an arm; while the stem, *J*, extends straight through the offset. Two independent connections are thus obtained for working the parts of the compound valve together or separately.

The distributing-valve is formed with a large exhaust-chamber opening inwardly in the middle and through ports near its ends, and with two induction ports opening into the steam-chest to admit steam through the passages, *G*, *F*, *D*, *C*, into the cylinder ports.

The distributing-valve rod, *J*, as shown in Fig. 3, representing a side view of the valve-shifting mechanism, is jointed to the upper end of a lever fulcrumed at its middle to an arm and connected at its lower end with a rod pivoted to an adjusting lever; the upper end of the arm is connected with the eccentric rod.

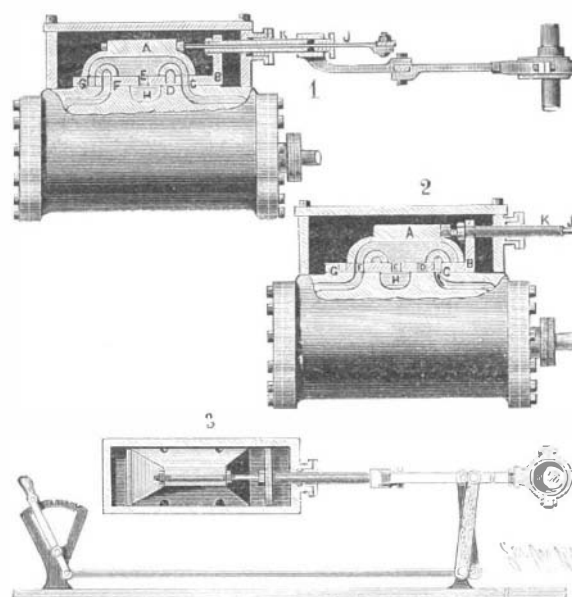
When the ports are in the position shown in Fig. 1,



Photograph by Brewster, Ventura, Cal.

THE COYOTE OF THE WESTERN PLAINS.

steam enters through the proper induction opening and passes through *F* and the port communicating therewith into the cylinder, forcing the piston to the right. The steam is expelled through the other cylinder-port, through *C*, through the center exhaust chamber, through *E*, to exhaust, *H*. When the rods are together moved to the right by the eccentric, the valve, *A B*, shifts to the right and the port, *G*, is over the left cylinder port, *D* is over the other cylinder port, and live steam passes through *D* to the cylinder port, forcing the piston to the left; the steam passes out through the left cylinder port, through *G*, to the central exhaust chamber through *E*, to the exhaust, *H*. To reverse the motion of the engine, the relation of the distributing-valve, *A*, and the slide-section, *B*, is changed by means



DAMERELL'S SLIDE-VALVE FOR STEAM-ENGINES.

of the rod, *J*, and sleeve, *K*; for this purpose the distributing valve is slid to the right on the section, *B*, as shown in Fig. 2, by means of the shifting mechanism. As before, the parts, *A* and *B*, are reciprocated by the eccentric; but *G* and *C* are now changed to live ports and *D* and *F* to exhaust ports, which changes the direction of the engine's motion. The valve is the invention of Henry Damerell, Ludlow, Mo.

THERE are indications that in the near future mercury will be one of the important metallic products of New South Wales. Several tons of ore have been brought to Sydney, and quantities of it distributed among the various government departments, in order that it may be thoroughly tested. Should the results of the experimental plant which is now being built prove satisfactory, the quicksilver trade of the world will become revolutionized, as the poorest assays show the ore to be richer than those of the American and Spanish mines. The subject is considered in the current number of our SUPPLEMENT.

#### The Current Supplement.

The current SUPPLEMENT No. 1247 has many articles of unusual interest. "The Land of the Boers" is an illustrated paper dealing with some of the interesting scenes in the Transvaal. "A Problem in American Anthropology" is by Prof. F. W. Putnam. "Recent Work Against the Gypsy Moth" describes the wonderful fight which is being waged in Massachusetts against this insect pest. "Experiments with High Frequency Currents at the Charlottenburg Technical Schools" is an article illustrating some curious experiments. "Electrical Propulsion at Tours" is an article describing the Diatto system, which bids fair to rival the underground trolley. Sir William White's splendid address on "Mechanical Science," before the British Association, is concluded in this number. "The Schneider-Canet Naval Turrets" describes the barbette turrets on this system for the iron-clad "Marceau." "Report of the Chief of the Bureau of Ordnance" is the annual report of Admiral O'Neil. "American Railroads," by George H. Daniels, is concluded in this number.

#### Contents.

(Illustrated articles are marked with an asterisk.)

Agriculture, year's progress in.....	346	Long scale measuring instruments*.....	345
Armor plating for Russia*.....	344	Meeting Society Naval Architects and Marine Engineers.....	345
Artificial paving stones.....	345	Meteor display.....	348
Automobile news.....	343	Meteorite collection, Vienna.....	343
Branding instrument*.....	347	Meteor, recording path of.....	345
Bureau of Ordnance, report of.....	338	National Academy of Science, meeting of.....	339
Castner, H. V.*.....	346	Notes and queries.....	348
Cruisers, bids for 16½ knot, accepted.....	338	Paris Exposition*.....	337, 342
Don Coyote*.....	346	Railroads in Asia.....	338
Great Britain, industrial invasion of.....	338	Rifles, new, for the navy.....	345
Gypsy moth*.....	345	Slide valve*.....	347
Inventions recently patented.....	348	South Africa, future of.....	342
Letter box, inventor*.....	340	Submarine boat.....	346
Lighthouses, new apparatus for.....	340	Supplement, current.....	347
Locusts, scientific extermination of.....	341	Turret for warships, super-imposed.....	339
		Wireless telegraphy between balloons.....	338