being printed in the Report of the National Museum for 1898:

"KERNVILLE, Cal., July 11, 18—

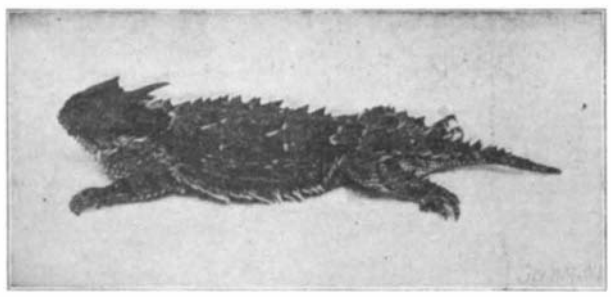
"Dear Sir: I caught a horned toad to-day that very much surprised Dr. Fisher and myself by squirting blood from its eye. It was on smooth ground, and not in brush or weeds. I caught it with my hand and just got my fingers on its tail as it ran. On taking it in my hand a little jet of blood spurted from one eye a distance of 15 inches, and spattered on my shoulder. Turning it over to examine the eye, another stream spurted from the other eye. This he did four or five times from both eyes, until my hands, clothes and gun were sprinkled over with fine drops of bright red blood. I put it in a bag and carried it to camp, where about four hours later I showed it to Dr. Fisher, when it spurted three more streams from its eyes. One of the same species, that I caught July 2, evidently did the same, as I found its head covered with blood when I caught it, but supposed it was injured in the weeds. It seems so strange that I send the horned toad to you alive.

"VERNON BAILEY."

In none of the discharges observed by me was there a large quantity of blood, but Dr. O. P. Hay states that from one he held a quarter of a teaspoonful was thrown. The lizard is *Phrynosoma blainvillei*, and the genus and its various species are found in central and southern California and in Mexico. In appearance it is disagreeable, but in reality the animal is perfectly harmless. The head is armed with spines, as, indeed, is the entire body, which, in the largest specimens, is about 5 inches in length. This lizard frequents the hot plains, as a rule, though it is also found in mountain regions. When approached, it usually depends upon its protective resemblance, crouching flat; then, when it fully realizes that it has been seen, it darts off with an absurd scrambling and waddling gait, making very good time; but it is easily caught. At first it bends its body, twists its horned head against the hand, but in a short time becomes perfectly tame. A specimen kept by me was very fond of being scratched upon the side, and would tip its body upward in response until it was virtually standing upon its side.

The lizard is the common horned toad of commerce, and constitutes one of the most popular "curiosities" of the West, hundreds being taken away alive every winter, while thousands are mounted and sent East to the various dealers in curiosities.

Since writing the above, Mr. Wakeley, a well-known collector, of Pasadena, who has probably handled more "horned toads" than anyone in the country, informed me that he has seen the blood forced from a lizard with such force that it struck the wall 6 feet away, and could be heard as it struck. He is convinced that it comes from the eyelid. Mr. Wakeley has collected and handled thousands of the lizards, and stated that the defense was often employed by them.



HORNED LIZARD WHICH EJECTS BLOOD FROM ITS EYES.

INCREASING USE OF OIL ON HIGHWAYS.

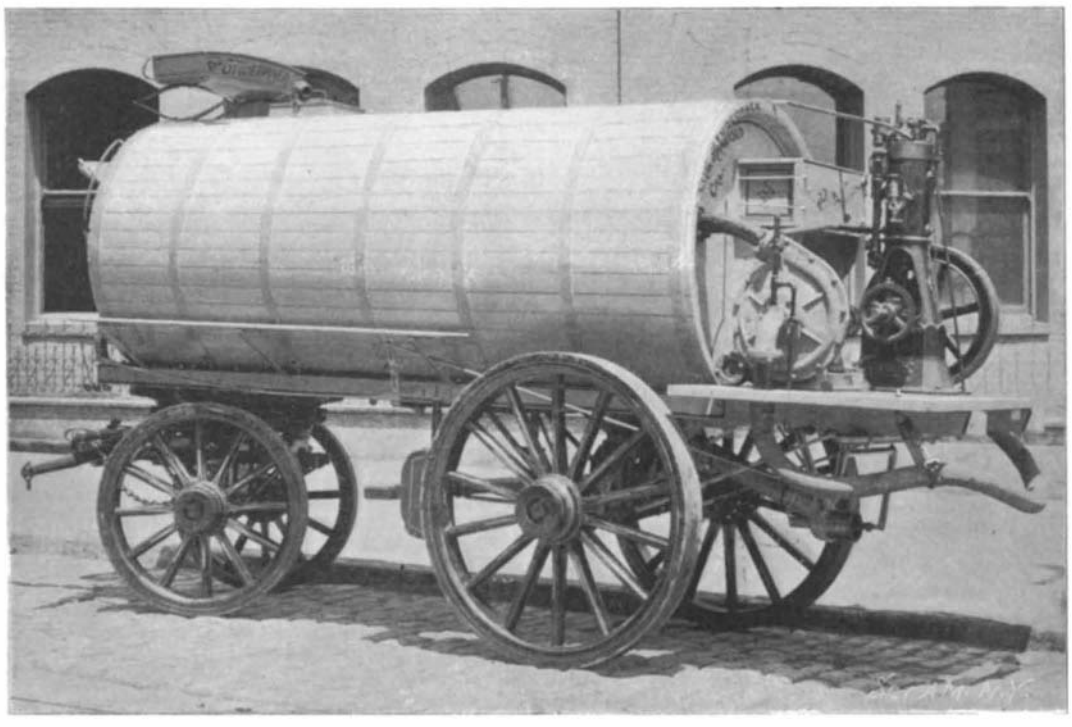
The use of oil upon the streets and highways in California is becoming more and more general, and the number of communities adopting the innovation is constantly enlarging. The system meets with favor as affording an outlet for a great portion of the oil now produced in large quantities, and at the same time as possessing real merit, inasmuch as by its use the condition of the roads is much improved and the comfort of the traveler greatly increased.

The city and county of Sacramento have, after conclusive experiments, adopted the plan, and the results have proved most satisfactory. The oil was applied hot and cold, the first giving the best results. Heated to a temperature of 180 deg. in a boiler adapted for the purpose the oil was pumped into the sprinkler and then sprayed over the roads. The tanks, boilers, pumps and injector cost about $1,000. The experiment proved the decided economy over the water system, besides lessening the cost of the maintenance of the roads, giving a hard, smooth surface and allowing increased loads with a decreased strain upon horses. Sprinkled with oil the roads are practically dustless, while the injury to rubber tires was found to be practically nothing. The first application requires one-third more oil than subsequent ones; two, in some cases one, applications a year is all that is ever required.

The city of Catton, in Southern California, computes that the expense of sprinkling its streets with oil has reduced the expense from $1,200 a year to $745, a saving of 45 per cent.

In the County of Kern 100 barrels of oil to the mile on roadways 12 feet wide sufficed for the first application, and 60 barrels for the second, six months later, secured permanently good results with generally improved condition of the highways. A contract was let to one oil company by which a road was first harrowed superficially and heated oil applied, with a result that confirmed the success of the process. The entire cost was covered by the payment of $1 a barrel for the oil. In Los Angeles, a large producer of mineral oil, the custom is fixed and all its delightful drives are sprayed with oil. The cleanliness and perfection of condition of the streets of that city is remarked by Eastern tourists as a most enticing feature of the place. In San Francisco, where the streets are mostly paved with basalt blocks or asphalt, sprinkling with oil has not been tried as a civic measure, but the commissioners of Golden Gate Park, in defiance of public opposition, concluded to make an experiment on an extensive scale on the main driveway of the park. This thoroughfare is 4½ miles long, and extends from one extremity of the park to the other, with an average width of 35 feet. Thousands of vehicles and a multitude of individuals pass over it every week. The roadway is scientifically constructed, and is as perfect an example of a dirt road as it is possible to make. The first application consumed 6,000 barrels of oil, costing about $1 a barrel, and the surface was thoroughly saturated. In soft spots the process was repeated. For a time the odor was objectionable, but this soon disappeared through the action of wind and sun. There was no damage to clothing, as anticipated, and for a time the driveway was avoided by persons with wheels, but whatever inconvenience was temporarily caused by its means soon vanished as the marked improvement in the drives became perceptible. Time has demonstrated the efficiency of the application of oil to the roads. The surface is impacted and firm, giving the same character to the drive as if covered by asphalt, and at the same time the visual appearance of the park has greatly improved. For eight months of the year, during which there is no rain, the clouds of dust arising from the dirt roads settled upon the foliage, turning it into a hue of dirty red marring one of the exceptional beauties of the park. Since the application of oil the dust no longer flies and the verdancy of the trees and plants is no longer obscured. The economy of oil over water for sprinkling is demonstrated. The commissioners estimate a saving of $500 a month on the one driveway alone, besides saving 70,000 gallons of water in each day. Two applications a year is all that is requisite. The cost of oil is now 87½ cents a barrel.

The sprinkler commonly used differs in no respect from that in which water was distributed excepting in respect to a regulator being attached which produces a fine spray of oil. An engine is sometimes attached to the tank where the oil is not supplied by gravity or when the tank is filled from the heating boiler.



OIL-SPRINKLING WAGON FOR USE ON HIGHWAYS.

Capacity, 1,500 gallons; width of spread, 28 feet.

Novel Use of an Electric Automobile.

We have heard of the application of an automobile storage battery to an X-ray apparatus where a physician was in hurry to complete an X-ray examination; but recently a use of a novel and more general character was made with very satisfactory results.

In Stratford, Conn., there has lately been installed a system of electric lights in the Congregational Church, current being supplied only at night from the neighboring city of Bridgeport. One of the proprietors of the SCIENTIFIC AMERICAN resides in this town and operates an electric surrey.

It happened that one Sunday morning was dark and cloudy, and as no current was furnished during daylight, there was no way to illuminate the dark interior portions of the church except by the use of a few oil lamps.

The owner and his family rode to church in the electric vehicle, then ran it under a window in the rear of the church, near where the switchbox is located, and, after throwing off the main supply switch, connected the feed wires to the storage battery in the carriage. As the several switches in the panel-box were turned on the church was well lighted up, and remained so through the service. At its conclusion the wires were disconnected and the family and minister taken home in the automobile.

Many in the congregation took it for granted that the lighting occurred from the regular source, and were much surprised upon learning of the method of supplying the electric current that was actually used.

Another practical use of storage batteries in boats has come to our notice. A gentleman in Connecticut has a small launch operated by a storage battery; this is charged in the daytime, and when not in use the boat is tied to the dock from which feed wires run (connected with the storage battery in the boat) to his house a short distance away. In the evening he thus uses the battery in the boat to light the house, and finds it a very satisfactory arrangement.

The British government is considering the advisability of sending an engineer to both American and continental cities to inquire into the subway systems and to report on their advantages over the London tubular system.

The Current Supplement.

The current SUPPLEMENT, No. 1342, is of unusual interest. The first-page article is devoted to "Canaigre-Growing in Southwest United States," by John E. Bennett, and is fully illustrated. This new industry is referred to elsewhere in this issue. "Geology and Geography at the Denver Meeting of the American Association for the Advancement of Science," is a report prepared especially for the SCIENTIFIC AMERICAN SUPPLEMENT by E. O. Hovey. "The Food of Nestling Birds" is accompanied by a complete list of all the food gathered for a brood of house wrens in a period of six hours. It is a long and interesting list. "The Mycenæan Question" is illustrated. "Stage Bridges at the Covent Garden Opera House, London, England," describes the latest phase in stage construction. "The Cultural Value of Engineering Education," is by Prof. Frank O. Marvin.

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