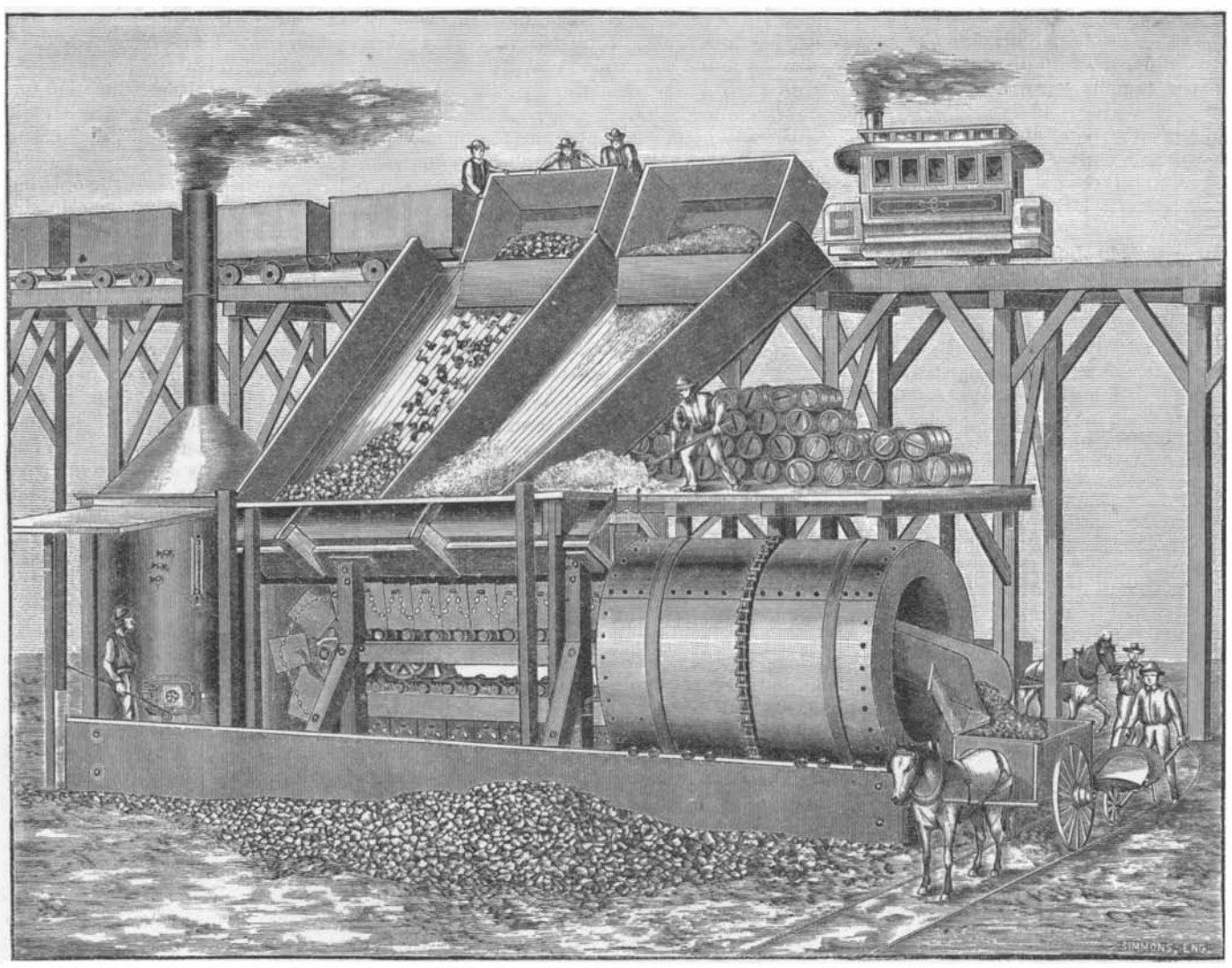
THE RANSOME CONCRETE MIXER.

The economic use of concrete has been greatly limited in every branch of construction by the crude and imperfect manner of mixing the materials. Hand manipulation with the shovel and hoe is not only slow and expensive, but is necessarily inefficient in the thorough admixture of the ingredients, and the character of the work suffers in consequence. In almost every other department of building, mechanical appliances, driven by steam, have superseded hand labor. The steam drill, pump, excavator, rock crusher, and elevator, may have only greater speed and efficiency to commend them, the quality of the work not necessarily being any improvement upon the more toilsome methods they have supplanted. But when materials are to be mechanically united and a compound formed, the quality of which depends upon the accuracy of the proportions and the thoroughness of the manipulation, manual labor becomes not only slow and expensive, but also a very inferior and unsatisfactory substitute for the precision and effectiveness of automatic mechanism, driven with ceaseless persistence and untiring force.

Ernest L. Ransome, of San Francisco, has invented and introduced into successful use there a series of easily operated machines for the more accurate handling and rapid and perfect mingling of the various constituents for concrete or monolithic construction. These devices are covered by U. S. patents Nos. 306,522, 322,006, 410,292, and 416,950. No. 1 is a stationary machine, No. 2 is portable, and No. 3, shown in our illustration, works automatically. The last named is the largest and latest of the series, and is designed to meet the requirements of the most extended work. It is perfectly automatic in the feeding, as well as in the process of mixing.

This mixer consists of, First: suitably arranged chutes or bins for the reception and supply of the cement, sand, and broken stone as required. To these are attached independent measuring chambers which automatically determine, by means of easily regulated gates or supply openings, the exact proportions of each to be fed to the mixer. Second: a traveling carrying trough or channel, which receives from the measuring chambers the several constituents, and conveys them to, Third: the rotary receiving drum or cylinder, which, mounted upon rollers or wheels, receives the materials, and perfectly mingles them into one compact mass.



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The rotary drum has upon the inner surface of its periphery directing guides or flanges, and lifting shelves, by means of which the materials are thrown together perfectly commingled and delivered. The water is admitted into the mixing chamber, and the discharge regulated to meet the requirements of the case.

The entire process, including the exact proportions of the constituents, is adjustable by the operator at will, and can readily be so arranged as to insure automatic accuracy and unexampled perfection of work.

The efficiency of this machine is something altogether unapproached by any other known process or device. The first of the No. 3 mixers was employed upon the Academy of Sciences, San Francisco, and the second upon the Piedmont and Fourteenth Street Cable Roads, Oakland, Cal.

Further information relative to these machines may be obtained by addressing the Ransome & Smith Co., 230 Montgomery Street, San Francisco, Cal., or at the office of J. W. Mather, 48 Wall Street, New York City.

The Mediterranean Region.

The British Association address in section E, geography, was delivered by Sir R. Lambert Playfair, K. C.M.G., F.R.G.S., president, who said that for nearly a quarter of a century he had held an official position in Algeria, and it had been his constant delight to make himself acquainted with the islands and shores of the Mediterranean, in the hope of being able to facilitate the travels of his countrymen in that part of the world. What he had to say might be to some a twice-told tale; but still he should like to speak in a familiar way of the "great sea," as it was called in Scripture. It was a well defined region of many parts, all intimately connected by geographical character, geology, flora, fauna, and the physiognomy of the people. To the general statement there were two exceptions—Palestine and the Sahara. The Mediterranean region was the emblem of fertility and the cradle of civilization. The sea, a mere gulf, now bridged by steam, rather united than separated the two shores, modifying their climate and forming a junction between three continents. The Atlas range was a mere continuation of the south of Europe. It was a long strip of mountain land, about 200 miles broad, covered with splendid forests, fertile valleys, and in some places arid steppes. In the east of the range the flora and fauna do not essentially differ from those of Italy; in the west they resemble those of Spain. A conifer (*Abies pinsapo*) and alfa grass or esparto grow in both the Atlas and South Europe. Of the 3,000 plants found in Algeria, the greater number are natives of Southern Europe, and less than 100 were peculiar to the Sahara. The commonest plant on the south shores, the dwarf palm, grows spontaneously on the north shores, but does not occur in Palestine, Egypt, or the Sahara. There are mammalia, fish, reptiles, and insects common to both sides of the sea. Some of the larger animals, such as the lion, panther, jackal, etc., have disappeared before civilization in Europe, but lingered through Mohammedan barbarism in Africa. There was abundant evidence of the former existence of these and other large mammals of tropical Africa in France, Germany, and Greece. It was probable they only migrated to tropical Africa after the upheaval of the great sea which in Eocene times stretched from the Atlantic to the Indian Ocean, making Southern Africa an island. The original fauna of Africa, of which the lemur was the distinctive type, was still preserved in Madagascar, which once formed part of Africa. The trout was found in all the snow-fed rivers which fell into the sea, but not in Palestine south of the Lebanon, or in Egypt, or the Sahara. The fresh water salmonoid was a European type often found in the Atlas. There were newts and tailed batrachians in every country round the sea, again excepting Palestine, Egypt, and the Sahara. The zone of desert called the Sahara was popularly supposed to have been a vast inland sea, in very recent times; but the theory was supported by geological facts wrongly interpreted. It was abundantly proved by the researches of travelers and geologists that such a sea was neither the cause nor the origin of the desert. Rainless and sterile regions occurred in two belts around the world about equal distances north and south of the equator. These corresponded in locality to the great inland drainage areas from which no water can be discharged into the ocean and which occupy about one-fifth of the totalland surface of the globe. Some parts of the Sahara (described in detail) are below the level of the sea, and here are formed open depressions without any outlets, inundated by torrents in winter and covered with a saline efflorescence in summer. The salt does not prove the former existence of an inland sea; it is produced by the concentration of the natural salts washed down by winter rains, with which the unevaporated residue of water becomes saturated.

Opening of the River Danube.

An important work in clearing the lower Danube was inaugurated September 15. After being joined by the Save, the Danube forms the boundary between Servia and Hungaria. At Semlin, near Belgrade, it is 1,706 yards wide, but soon becomes contracted by spurs of the Transylvanian and Servian Mountains. Within the space of seventy-five miles there are eight distinct rapids, the shortest (one and one-half miles) and the most difficult being that known as the Iron Gate.

It has hitherto presented a serious and impassable obstacle to navigation. Many attempts have been made to enlarge the channel, Austria having bound herself to do so under the treaty of Berlin, but the first serious effort has only now been made.

On the 15th, the Hungarian minister of commerce fired the first of a series of blasts by means of electricity, intended effectually to remove a portion of the obstruction.

Hitherto two engineering systems have been advocated, the first being urged by French capitalists, and involving the use of locks; the second was presented by an Anglo-American company, which proposes to utilize the plan adopted by the Roman Emperor Trajan, begun by him, but never completed. This proposes to construct a navigable canal round the Gate, blasting minor rocks, cutting channels, building dams and other improvements. It is this plan that has been adopted.

The effect of the present undertaking on the commerce of Europe and the East, when it shall have been completed, will be most beneficial, and can only be described as a most desirable international enterprise.

The Forty-Inch Telescope Objective for the University of Southern California.

The glass for one part of the great forty-inch objective for the new Southern California observatory has been received by the Clark Brothers, of Cambridgeport, Mass. They were the makers of the thirty-six inch objective of the Lick telescope, which is now the largest in the world. The new one is to be of four inches greater diameter. The telescope is to be mounted in an observatory upon Wilson Peak, of the Sierra Madre Mountains, 12 or 15 miles back of Los Angeles, Cal. The site is about 6,000 feet above sea level, and will be favored by an unusually clear atmosphere.

PAPER and pulp making stands thirteenth among the sixty-three industries of Wisconsin, and new plants to the value of $243,775 were erected last year.