THE BITTER ROOT TUNNEL or St. Paul Pass Tunnel of the Chicago, Milwaukee & Puget Sound Ry. (the Pacific extension of the Chicago, Milwaukee & St. Paul Ry.) has been bored through, the heading meeting on Feb. 9, according to information received from Mr. E. J. Pearson, Chief Engineer of the Lines West. Connection of the survey lines showed practically exact junction, the divergence in levels being only 0.01 ft., and in alinement 0.03 ft. In the last month of the work very rapid progress was made; the length of full-section excavation in both ends during January was 750 ft.

THE CONSTITUTIONALITY OF THE U. S. RECLAMATION Act has been affirmed by the U. S. Circuit Court of Appeals at San Francisco in the case of the United States vs. Hanson. The point at issue had no particular engineering interest, but the decision is considered of great importance, in view of the fact that the constitutionality of the Act was questioned in the decision of the U. S. Supreme Court in the Kansas-Colorado case involving an interstate stream.

FILTERED WATER for the whole of Pittsburg, save the recently annexed Allegheny section, became available on Feb. 4 by connecting the original Pittsburg municipal system with the mains of the Monongahela Water Co. The property of this company has been or is about to be taken over by the city, as noted on page 87 of our issue of Jan. 21, 1909. The Allegheny district is still supplied with unfiltered water, but an extension to the filtration plant is proposed, in order to give it as well the benefit of filtration.

A FALLING-OFF IN TRAFFIC ON THE GREAT Lakes is noted in the report for the calendar year 1908. The volume of traffic on the Great Lakes during 1908, as measured by domestic shipments of merchandise from the various lake ports, was 60,518,024 net tons, compared with 83,506,991 and 75,609,648 net tons shipped during the 1907 and 1906 seasons, respectively. The considerable decrease in the 1908 total was due mainly to the smaller shipments of iron ore, though the shipments of all other principal items, except hard coal and salt, also show smaller totals than a year ago. The iron-ore shipments by lake during the year, exclusive of 228,784 gross tons exported to Canada, totaled 24,939,185 gross tons, compared with 40,727,972 gross tons reported for the 1907 season. The greater part of this ore, namely, 20,444,751 gross tons, was received at Lake Erie ports; the rest is credited mainly to Chicago, Indiana Harbor, Gary, Milwaukee, and Detroit. About a million gross tons of ore are credited to the two new receiving points of Indiana Harbor and Gary. Iron manufactures also fell below the 1907 record.

Domestic grain shipments by lake during the past season aggregated 111,213,910 bushels, of which 57,754,183 bushels constituted wheat, 22,546,795 bushels corn, 15,701,406 bushels oats, 13,516,156 bushels barley, and 1,695,370 bushels rye. The total 1908 grain movement by lake shows a 22.8% decrease from the 1907 total. The largest relative loss of almost 50% is shown in the shipments of corn. The lake shipments of oats declined about 24%, while lake shipments of other grains likewise show perceptible decreases as compared with 1907 totals. Rates on grain were decidedly lower than in 1907. The 1908 shipments of flour, 1,188,831 net tons of 10 bbls. each, likewise present a smaller total than for the preceding year.

The annual lumber shipments, 944,742,000 ft. B.M., were 32% below the total reported for the year 1907. Hard coal shipments were slightly in excess of the 1907 figures but those of soft coal fell off some 12%. The rates for each were about the same as last year.

The total domestic receipts by lake during the year 1908 aggregated 58,909,345 net tons. About 73% of the total merchandise tonnage received is credited to twelve ports. For the year 1908 the largest tonnage received is shown by Chicago, closely followed by Buffalo, which held first rank as a receiving port during the year 1907. The shipments appear to be less concentrated, the 12 ports in question shipping less than 59% of the total tonnage. Notwithstanding the considerable decrease in ore shipments for the past season, Duluth shows by far the largest tonnage of domestic lake shipments, followed at some distance by Superior, West Superior and Buffalo. It should be noted that the figures just given comprise only domestic shipments, the aggregate weight of exported goods not being recorded by the custom houses from which the Bureau of Statistics obtains its record of foreign commerce.

The vessel movement on the Great Lakes during the year in question also shows a considerable decrease compared with 1907 figures. The total departures in the domestic trade numbered 65,624 vessels, of 83,378,323 net tons, compared with 73,769 vessels, of 99,166,409 tons, reported for the calendar year 1907. The average size of the vessels plying on the Great Lakes was 1,271 tons, compared with 925 tons for the year 1902 and 1,100 tons for the year 1905.

The above information is a part of the advance report of the U. S. Department of Commerce and Labor.

A FIREPROOF BUILDING for the U. S. Geological Survey and other bureaus of the Department of the Interior has been made the subject of letters addressed to the House of Representatives by the Secretaries of the Treasury and Interior Departments. It is estimated that a fireproof building for this purpose, including vaults and heating and ventilating apparatus, could be built for $2,500,000. The buildings now occupied by the Survey are described as "inadequate, unsuitable and unsafe" and as giving rise to "unhealthful conditions and the necessary use of artificial light," and further as hampering "the transaction of public business" and causing "a real loss in the efficiency of the public service." It is said that

even on the brightest days 131 members of the survey work only with the aid of artificial light, and on cloudy days this number is increased to 420. The lack of a natural light not only seriously affects both the quality and the quantity of the drafting, engraving, microscopic and other technical work, which form so important a part of the Survey's activities, but the injurious effect upon the eyesight is a matter of experience with a large percentage of those engaged in certain classes of work.

The constant danger of fire in these buildings presents the most urgent ground for consideration of this estimate. An inventory of the public records and other property exposed to this danger at the present time aggregates over $4,500,000, with the following items:

Manuscript maps, reports, illustrations, notes and records in process of preparation for publication	$1,514,000
Permanent records, including stream-gaging records, mine maps, and other data not replaceable	1,250,000
Library and catalog	520,000
Maps in process of engraving	880,000
Engraved plates	634,000
Instruments and apparatus	157,000
Engraving and printing equipment and supplies	75,000
Publications—reports and maps	196,000
Miscellaneous office equipment	114,000
	$4,840,000

A fire which threatened the contents of the building now used by the Survey was recorded in our issue of Dec. 24, 1908.

A RADICAL IMPROVEMENT IN HIGH-SPEED steel is claimed by Jonas & Colver, of Sheffield, England. They say that they are able to make cutting steel having three to six times the edge endurance of the best present high-speed tool steel. The new steel is hardened in water or oil. Its discovery is said to have been brought about by litigation against the firm for infringement of the Taylor-White patents on steel which acquires great edge endurance by high heating and air hardening.

BATTLESHIP MAINTENANCE COST during the past year, found by averaging the cost of current repairs on 17 United States battleships during 1908, amounts to $110,000 per year per ship. This does not include the more extensive repairs or overhauling. The coal cost for the vessels was $5,545,000, of which about 40% is due to transportation and storage. These figures were given by the Secretary of the Navy in reply to inquiry by the Senate.

ILLUSTRATED HEARINGS before the House Committee on Irrigation were recently held at Washington, thus, so far as we know, introducing a new feature in Congressional hearings. The purpose of these particular hearings has been to set forth the progress of the engineering work of the U. S. Reclamation Service. At the hearing on Feb. 2, Mr. E. G. Hopson, in charge of the Pacific Coast Division, and Mr. Christian Anderson, Project Engineer in charge of the Okanogan project, Washington, appeared before the Committee.

THE DISCHARGE OF SEWAGE and other polluted matters into lakes and ponds having an area of 1,000 acres or more lying wholly in the State of Vermont is prohibited by an act of the Vermont Legislature, approved Jan. 27, 1909. The act will take effect Oct. 1, 1910. The range of penalties for violation of the act is from $200 to $20.

A RAILWAY HEALTH EXHIBIT is being prepared by the State Board of Health of California. Arrangements have been made with the Southern Pacific Co. to furnish a car for transportation over its lines of railway, and it is expected that the Santa Fe will supply like accommodations. The following partial list of things to be included in the exhibit has been kindly supplied us by Dr. N. K. Foster, Secretary, California State Board of Health, Sacramento, Cal.:

Models of kitchen operating room, room ventilation, isolation room, ventilation room (oil heater), sand filter, garbage "pit and cone" incinerator, septic tank for private home, butcher shop and tenement above, room prepared for disinfection, tent, frame, screen tent, sleeping porch, window sleeping canopy, Fort Stanton model sleeping shack, polluted surface well, polluted lake water (relief map), summer hotel showing dangers from typhoid, polluted surface stream water (relief map), dairy and farm house.

In addition, there will be an exhibit from the Pure Food Laboratory; another from the Bacteriological Laboratory, and also a small exhibit of insects which have to do with the transmission of various diseases. The insect exhibit is being prepared by Prof. R. W. Doane, of the Department of Entomology and Bionomics of Leland Stanford University. Prof. Doane has kindly written us the following regarding his exhibit:

I am showing several of the common mosquitoes of the state, distinguishing between those forms that carry malaria and yellow fever and those that, so far as we know, do not disseminate disease. I am also showing a small case of flies, house-flies, stable-flies and others, and pointing out how they may carry various diseases. I am also showing a few charts giving enlarged drawings of some of these insects, showing something of their structure and life-history. I am also showing a few ticks, fleas and bed-bugs, which are also concerned in carrying disease.

THE ACREAGE OF LAND UNDER IRRIGATION during the calendar year 1908, in the projects of the U. S. Reclamation Service, which are now being operated, is given by the "Reclamation Record" as follows:

AREAS ACTUALLY IRRIGATED DURING THE SEASON OF 1908.

State.	Project.	Acres.
Arizona	Salt River	115,000
Arizona-Colorado	Yuma	3,800
California-Oregon	Klamath	9,378
Colorado	Uncompahgre	15,600
Idaho	Minidoka	24,464
Idaho	Payette-Boise	55,000
Kansas	Garden City	5,558
Montana	Huntley	4,400
Nebraska-Wyoming	North Platte	23,220
Nevada	Truckee-Carson	27,450
New Mexico	Carlsbad	8,000
New Mexico	Hondo	1,500
New Mexico-Texas	Rio Grande (Liasburg)	17,000
North Dakota	Buford-Trenton	1,200
North Dakota	Williston	2,000
Oregon	Umatilla	2,500
South Dakota	Belle Fourche	5,000
Washington	Okanogan	1,353
Washington	Sunnyside	42,000
Wyoming	Shoshone	2,600
Total		367,023

U. S. RECLAMATION SERVICE PROJECTS were in the following stage of construction on Feb. 1, 1909, according to the "Reclamation Record":

	Per cent. Completed.
Arizona, Salt River Project	76.5
Arizona-California, Yuma Project	64
California, Orland Project	28
California-Oregon, Klamath Project	36.7
Colorado, Grand Valley Project	2.5
Colorado, Uncompahgre Project	67.7
Idaho, Minidoka Project (gravity system)	100
Idaho, Minidoka Project (pumping system)	47
Idaho, Payette-Boise Project	93
Kansas, Garden City Project	97.8
Montana, Blackfeet Project	8
Montana, Flathead Project (preliminary work).	
Montana, Milk River Project	6
Montana, St. Mary Project	18
Montana, Sun River Project (Fort Shaw Unit 99% completed).	6
Montana, North Dakota, Lower Yellowstone Project	89
Nebraska-Wyoming, North Platte Project	73
Nevada, Truckee-Carson Project	90
New Mexico, Carlsbad Project	99.8
New Mexico, Hondo Project	99.8
New Mexico, Rio Grande Project (Engle Dam preliminary work Leasburg Diversion)	100
North Dakota, Buford-Trenton Project	38
North Dakota, Washburn project (preliminary work.)	
North Dakota, Williston Project	64
Oregon, Umatilla Project	84.25
South Dakota, Belle Fourche Project	64.5
Utah, Strawberry Valley Project	31
Washington, Okanogan Project	84
Washington, Sunnyside Project	30
Washington, Tieton Project	49
Washington, Wapato Project (preliminary work)	
Wyoming, Shoshone Project	42.5

PRESERVATION OF LOBLOLLY PINE telephone poles by a creosote treatment has been demonstrated by the U. S. Forest Service, cooperating with the North Louisiana Telephone Co. Such success in protection against decay, at a low cost, has resulted that a concern has been incorporated under the name of the Louisiana Creosoting Co., to operate commercially the plant designed by the Forest Service. The treating plant, which has been in operation since the latter part of October last, is of the non-pressure or "open-tank" type. The installment of this style of plant has been shown by articles in Engineering News, Oct. 22 and Dec. 31, 1908. The plant used in the experiment with the North Louisiana Telephone Co. is equipped with a horizontal treating cylinder 50 ft. long and 6 ft. in diameter. It was designed by the Forest Service, whose representative also supervised the construction and operated the plant for several months. During this period, 3,000 poles, 2,500 cross-arms and 500 ties were treated, an amount sufficient to determine the most economical methods of treating these classes of material. The Forest Service then withdrew and the plant is now being successfully operated by the owners according to reports issued by the Forest Service.