STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

THE ORE.-BIN

VOL. 10 NO. 3 PORTLAND, OREGON March 1948

STATE DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES
Head Office: 702 Woodlark Bldg., Portland 5, Oregon

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THE DOMESTIC MERCURY SITUATION

by
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Vice-president Cordero Mining Company*

The present situation of the domestic mercury industry can be stated very briefly. The industry must sell at 1935 prices while operating at 1948 costs. For the last 100 years there have probably been an average of close to 40 operating mines in the United States each year. During the war years, 1939 to 1945, the number of operating mines increased to almost two hundred. At the close of 1947, only three mines were operating continuously, and two or three more were operating on an intermittent basis. It is quite safe to say that the industry as a whole is losing money. It is equally safe to say that no individual mine could show a profit if it were to carry on anything approaching normal exploration and development work. It is my opinion, although I cannot be certain, that no mercury mine in operation in the United States today is making a profit.

The five or six mines still running are operating on "hope," and as the months go by with no improvement in sales prices and rapidly rising costs, that "hope" is fading. In the meantime, to remain in operation at all, they are mining only the high-grade ore and leaving behind ore which would have shown a handsome profit under conditions prevalent before the war. When the end of this stage is reached the mines will be allowed to fill with water and cave.

The cause of the deterioration of the domestic quicksilver industry is the importation and the offerings of metal for importation from Russia, Japan, Yugoslavia, Italy, and Spain, and minor amounts from Mexico and South America. These foreign offerings are a result of surplus production of the war years, plus loss of other than United States and British markets for current foreign production. Most of the nations who offer the metal suffered seriously during the war and their desire for American dollar exchange overshadows natural economic laws.

Current artificial exchange rates make proper evaluation of foreign cost difficult, if not impossible. Russian offerings by way of Brazil are of uncertain origin but if they came from the prewar mercury operations of the Ukraine, the costs are probably in excess of the offering price. Yugoslavia imports come from the Idria mine near Trieste taken away from the Italians at the end of the war. With any degree of inflation it is doubtful if the costs at that mine are such that would permit economic competition. Apparently Tito's requirements for dollars are such that the cost of production means little if it will obtain the desired dollar exchange. Offers and shipments from Japan are in large part captured Japanese metal which the United States government imported into this country and sold on the New York market at below the going market price.

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*Testimony presented to National Resources Subcommittee of Senate Interior and Insular Affairs Committee, Denver, Colorado, February 3, 1948. Subcommittee chairman, Senator George Malone.

Most of the importations from Italy, like those from Spain, are controlled by the European mercury cartel. The two principal mines in Italy are controlled by the Italian government. The principal Spanish mine is owned, operated, and controlled by the Spanish government. Agencies of these two governments are the principal members of the European mercury cartel and normally control world prices for the metal.

To determine the cost of production of these various mines abroad is difficult. Even for Italy and Spain where the production is by far the largest, the possibility of determining any exact cost is almost impossible. The only information available on the cost of production in Italy is so mixed up with rapidly changing official exchange rates and the violent fluctuation of "black market" rates that any estimates on Italian costs can only be considered as guesses. At the conclusion of the invasion of Italy and for a short period thereafter when the mines first resumed operation, verbal reports from government sources indicated a cost of 8600 lira per flask. At that time the official exchange rate was 100 lira to the dollar, giving a dollar cost of production of $86 per flask. As internal inflation took place in Italy and as official exchange rates, and "black market" rates rose from 200 to 500, and finally to 600 lira to the dollar, the cost of production in dollars sank to a possible low of $14.00 a flask. More recent information may indicate that internal inflation is making up for the higher lira exchange rates and if the Italian producers are now paying 500 lira per day for miners, then the cost of production in Italy may be about $40.00 a flask.

Insofar as costs of production in Spain are concerned, the situation is no better than in Italy. The last official costs available to the industry are those of the Spanish Republican regime, a figure of approximately $40.00. Under General Franco it is known that these costs were reduced possibly as low as $20.00 or $25.00. It seems illogical that they could be reduced much below that figure considering the fact that at the Almaden mines it requires some 2000 men to handle 300 tons of ore per day. The only figures or wage rates available are those of January 1946 when the director of the Almaden mine stated that the highest wage rate paid was $1.10 per ten-hour day. Since that time information from the American Attache indicates an internal inflation of 100 percent. It is probably safe to say that the Spanish cost of production is not over $40.00 a flask, although it may be as low as $30.00, or as high as $50.00.

During the war years the domestic quicksilver industry produced the total requirements of the United States and also an additional supply for our allies. Prior to the war, this was considered an almost impossible job but at no time from 1939 to 1945 was there any shortage of the metal in the United States. In fact, in January 1944, domestic producers were providing an almost embarrassing surplus. In spite of this fact, the United States government purchased large amounts of mercury from Canada, Mexico, Spain, and some South American countries. Fortunately, at the conclusion of the war, in the fall of 1945, almost all of this surplus mercury owned or controlled by the United States government was channeled into the government stockpiles. Captured material abroad, together with some return lend lease metal from Britain, brought totals of mercury in the stockpiles far above the minimum stockpile requirements. Since little, if any, of the foreign metal was used during the war, and since the domestic American producers were able to supply all requirements, almost the total stockpile of mercury is of foreign origin. No domestic metal has been purchased for the stockpile since the war and no such purchases are contemplated. It might be well for the Armed Services to reconsider the mercury requirements in relation to the stockpile quotas. In September of 1945, military requirements indicated a consumption of 12,000 flasks a month, or 144,000 a year. If, in some future emergency, these amounts were to be required, neither the stockpile quotas, nor the total Western Hemisphere's reserves at prices well above the prices during the war years could supply the amounts required.

Prior to 1939, proven and probable reserves of mercury rarely averaged over a six months' supply for the mines then in operation, and any individual mine which had in reserve more than one year's supply was in an exceptionally favorable position. At the end of the

war period three domestic mines alone had reserves (based on a prewar cost and prewar prices) of seven or eight years. Since the war, with only prewar prices and no prewar costs, it might well be said that there are no ore reserves of mercury in the United States which may be mined at a profit.

In the quicksilver industry the largest individual item of expense is labor. Prior to the war, the cost of mine labor to the operator ranged from 60 to 70 cents an hour. At the present time, the cost of mine labor to the operator ranges from $1.15 to $1.60 an hour, including overtime. Thus, the principal cost of mine expense has more than doubled. The second largest item of expense is mine timbers. These have increased from $30 a thousand in 1935, to $90 a thousand at the present time. The third largest item of expense, fuel, has increased from 6¢ to over 13¢ a gallon. Thus, the principal items of cost of production have increased between 100 and 200 percent and there has certainly been no increased efficiency to offset this increase. While the mines remaining have been attempting to mechanize to the greatest possible extent, this mechanization has not been able to offset more than a very small part of the higher costs. In relation to 1935, the last year in which we had comparable sales prices for mercury, costs of operation have increased between 125 to 150 percent. Thus, present costs of operation at most mines are almost 2½ times what they were before the war when the operator received the same price for his metal as he receives at the present time.

Since it is quite apparent from the above that the domestic mercury industry under present conditions is doomed to early extinction, the question arises as to what, if anything, should be done about it. In the event there is no reasonable probability of war in the next five to ten years, I think it is probably proper to say that nothing should be done and the industry should be allowed to die. From the newspapers and from the rumors in Washington there is apparently no assurance that any such peacetime period can be counted upon, so it would appear that the nation cannot afford the destruction of the quicksilver industry. If the logical conclusion is reached that the mercury industry not be permitted to die, then there are several possible cures for the present situation.

1. The anti-dumping laws could be strengthened so that foreign metal could not be unloaded in this country through the subterfuge of depreciated currencies at prices below cost of production.

2. Anti-trust laws could be so enforced preventing the lowering of the price by foreign cartels so that they may later monopolize the market in the United States.

3. An increase in tariffs to correspond with the low foreign wages now less than ten percent of American wages.

4. Include mercury in some sort of a premium price plan which would keep the domestic industry afloat.

5. Approve some manner of exploration and development payments paid by the government to encourage the operator to maintain and increase reserves and cover his shutdown cost while the mines are inactive.

6. Adopt a policy of parity price support for domestic mining similar to the agricultural parity price support plan.

7. Adopt a policy of underground stockpiling which would give some degree of incentive to the domestic operator to maintain and increase his reserve and to retain his mine in operation.

Any of the above suggested programs would help the quicksilver industry survive the present period of low prices and high costs. It is the thought in the industry that even if nothing is done, present conditions would probably not last for a period of more than five or ten years. The reason for this feeling is that the current price of quicksilver, based on what it will buy, or based on its cost of production in man days, is probably at its lowest level in history. In 1875 the price of mercury was $25.00 a flask but it would

still purchase twenty-five days of labor. At Huancavelica, Peru, in the 17th century, one flask of quicksilver would purchase 200 days of labor or more. In the 1920's one flask of quicksilver would purchase 25 to 30 days of labor. In the depths of the depression of 1932 one flask of quicksilver would buy ten days of labor. At the present time $77.00 per flask on the New York market will buy from 6 to 7½ days of labor.

In the East, there is a wide publicized propaganda to "save our domestic mines for emergencies and import all of our needed strategic and critical metal." To anyone not familiar with the mining business it is very appealing; to anyone with knowledge of mining it is national suicide. It is not necessary to tell this to the chairman of this committee nor probably to anyone present at this time, but for the sake of the records, it is impossible to over-emphasize the fact that without a healthy industry engaged in mining each of the strategic and critical metals, there will be no deposits of those metals developed and available for mining in case of some future war. Further, there will be no manpower available or engineering talent available with the knowledge of the problems of those particular metals. Take the quicksilver industry as an example; if that industry is allowed to die, the mines will be allowed to fill with water and cave, but before that time the highest grade ore will have been removed, leaving only marginal shells around the edge of the principal ore bodies. The men with the know-how and with the knowledge of the respective mines will have drifted away into other enterprises, and the intimate knowledge of those deposits will be lost. When and if the country turns to those supposed reserves in an urgent need for strategic metals, they will find no one interested in them or able to mine them and the old mines in such shape that it might take years to put them back into efficient operation. The length of time required, even in peacetime, would be much greater than the length of time required to bring our healthy industry of 1939 into its peak production of 1943. It has often occurred to me that the difference in output of quicksilver, and for example chrome, during the last war is a good indication of what a healthy industry could do versus what an unhealthy industry did. When the war started, we had no chrome mining industry. The government spent a great deal of money in encouraging chrome mining during the war but increased tonnages of chrome only began to make themselves felt in the closing days of the period. Quicksilver, on the other hand, had a healthy industry in 1939 and with an adequate price incentive produced almost twice what was expected of it. It did this probably with less government help than any other division of the metal mining industry.

In conclusion, I would again like to re-emphasize the fact that the mercury mining industry, although over a hundred years old, is now almost dead. If, however, there is some tangible evidence that authorities realize the real condition and real importance of the domestic industry then it can probably struggle along in its torture for awhile waiting for relief. I greatly doubt that any part of the industry can or will survive very long in the absence of such evidence.

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NIEL ALLEN REAPPOINTED

On March 10 Governor John H. Hall reappointed Mr. Niel R. Allen of Grants Pass as a member of the Governing Board of the State Department of Geology and Mineral Industries. Mr. Allen's new term begins March 17, 1948, and ends March 16, 1952.

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SOUTHERN OREGON DREDGES LEAVE STATE

Mr. Charles Stearns of the Stearns and Owens Dredging Company reports plans to transfer operations from Josephine County, Oregon, to the vicinity of Fairbanks, Alaska, in the near future. Stated reason for this move is the excessive cost of resoiling dredged land. Resoiling was required in their contract covering dredging on the Applegate River.

The company began operations on the Kubli Ranch Placer on the Applegate River in 1940 and continued until closed down by the Government during the war period. Subsequent work has been on Poormans Creek and along the Applegate River.

This move represents the second major loss to southern Oregon placer mining within recent months. During the latter part of 1947 the Pantle Gold Dredging Company left the state to operate in Arizona. This latter company, using a dragline and dryland washing plant, operated east of Jacksonville during the 1946-1947 season, and late in 1947 dredged ground near Rogue River.

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NEW METHOD OF OBTAINING UNDISTURBED SOIL SAMPLES

by

Ralph S. Mason*

When it is necessary or advantageous to obtain undisturbed samples of loose soil, sand, volcanic ash and similar materials, the following method has been found to be simple and inexpensive. The method involves the use of the barrel obtained by cutting off the orifice end of a common hand sprayer (Flit gun). This produces a barrel approximately 12 inches long and 1¼ inches in diameter, equipped with a plunger and handle. This barrel

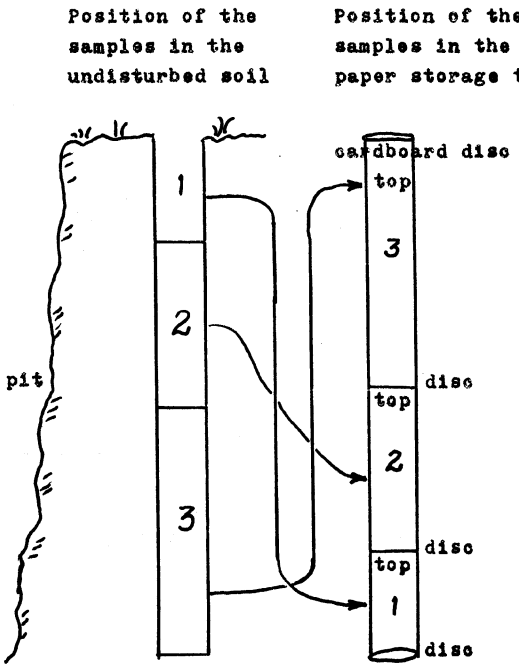

Fig. 1 - Diagram illustrating method of taking samples with Flit gun sampler and order in which samples are placed in paper tube.

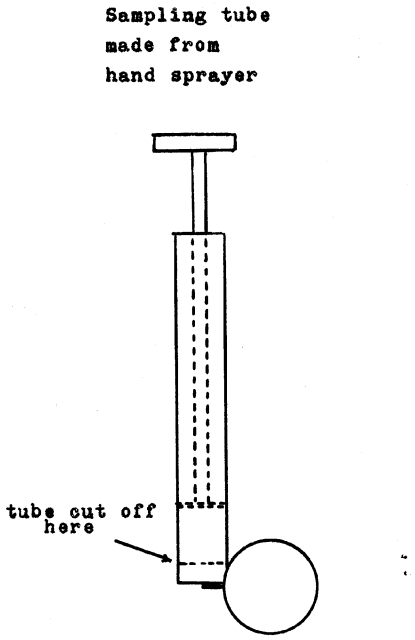

Fig. 2 - Diagram showing how orifice end of Flit gun sprayer is cut off to form sampling tube.

becomes the coring device and the only treatment required is to slightly sharpen the cutting edge with a file. Numerous samples of volcanic ash have been taken with such a device with excellent results. In practice the strata to be sampled are first cleared of any debris and a pit is dug to the bottom of the section to be cored. The "gun" is then held vertically and pushed into the bed approximately 5 or 6 inches back from the face of the pit. The amount of

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* Mining Engineer, Oregon State Department of Geology and Mineral Industries. Article reprinted from Ecology, January 1948 issue.

core that can be taken at one "push" will vary with the material but for volcanic ash a maximum of 6 inches was found best. A gentle downward pressure combined with a rotary or oscillatory motion is sufficient to fill the tube to the desired depth. The amount of penetration can be measured easily if an index scratch is made on the plunger handle when the plunger is flush with the cutting edge of the barrel. When the barrel is filled to the desired point the surrounding material is stripped away with a trowel or shovel down to the tip of the gun. A cardboard disc the same diameter as the barrel is then slipped under the cutting edge of the barrel and the barrel removed without disturbing the plunger. A sheet of kraft wrapping paper the same width as the length of the barrel and about a foot long is next wrapped around the tube and secured with either mucilage or scotch tape. The lower end of the tube is sealed by means of a cardboard disc and scotch tape. By exerting a steady, firm pressure on the handle of the gun the sample can be extruded undisturbed into the paper tube. Several samples can be loaded into one paper tube if a cardboard disc is used to separate them. When full, the tube is sealed off in the same manner as the other end. In obtaining the subsequent samples in the section, the gun is placed over the spot marked by the cardboard disc used as a marker and the coring process repeated. The packaged cores can be transported easily in a container such as a tall fruit juice can. In examining the cores in the laboratory it must be remembered that the samples are stacked in the paper tubes in reverse order and in this respect it is good practice to write on each tube the position of the various samples taken.

It has been found to be more expeditious to use two guns if more than one person is taking the samples since the second gun can be loaded while the first one is being extruded into the paper tube. Care must be taken not to damage the cutting edge on the gun by exerting undue pressure during the coring operation since the tube is of light gauge metal and will be deformed, thus causing difficult extrusion and also difficult insertion into the partially filled paper tubes. The cores can be opened easily for inspection by making two parallel longitudinal slits the full length of the sample and removing the strip of paper. Width of the strip removed should depend on the nature of the examination to be made.

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THESES AND OTHER UNPUBLISHED REPORTS IN DEPARTMENT LIBRARY

Author	Title
Allen, John Eliot	Contributions to the structure, stratigraphy, and petrography of the Lower Columbia River Gorge, 1932.
	Structures in the chromite deposits of the West Coast, 1940.
Allen, Rhesa M., Jr.	Geology and mineralization of the Morning Mine and adjacent region, Grant County, Oregon, 1947.
Barnes, Farrell F., and Butler, John W., Jr.	The structure and stratigraphy of the Columbia River Gorge and Cascade Mountains in the vicinity of Mount Hood, 1930.
Bassett, Robert George	The concentration of Oregon chromite bearing sands, 1945.
Bonneville Power Administration	Industries important to national defense feasible of establishment in the Pacific Northwest, 1940.
Buck, Adeline B.	The Willamette meteorite, 1936.
Callaghan, Eugene	Geology of the Heceta Head district, 1927
Crosby, W. O.	Benham Falls project, Deschutes River drainage, 1920.
Harper, Herbert E.	Geology of the Molalla quadrangle, 1946.

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Hotz, P. E.	Iron ore deposits near Scappoose, Columbia County, Oregon, 1942.
Leever, William H.	Origin of the mineral deposits of the North Santiam mining district, Oregon, 1941.
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Lowell, Wayne R.	Glaciation in the Wallowa Mountains, 1939.
	The paragenesis of some gold and copper ores of Southwestern Oregon, 1942.
Lowry, Wallace D.	The geology of the northeast quarter of the Ironside Mountain quadrangle, Baker and Malheur counties, Oregon, 1943.
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Schenck, Hubert G.	A preliminary report of the geology of the Eugene quadrangle, Lane and Linn counties, Oregon, 1923.
Sheets, M. Meredith	Contributions to the geology of the Cascade Mountains in the vicinity of Mount Hood, 1932.
Souza, M. E.	Physiography and structure of the Oregon Coast Range Province, 1927.
Spreen, Christian August	A history of placer gold mining in Oregon 1850-1870, 1939.
Stowell, G. E.	Report on the geology and ore deposits of the Quartzville district, Oregon, 1944.
Wilcox, Howard G.	Fireclays and light colored clays of Western Oregon and the commercial development of a number 1 firebrick, 1935.
Wilkinson, William D.	The petrography of the Clarno formation of Oregon with special reference to the Mutton Mountains, 1932.
Williams, Ira A.	The Lava River tunnel (photostatic copy): Natural History, vol. 23, no. 2, 1923.
Wood, Hiram B.	Rock quarries and subsurface drainage in Washington County and old and new rock quarries, 1941.
Wray, Charles F.	The geology of the northwest quarter of the Ironside Mountain quadrangle, Grant and Baker counties, Oregon.
York, Harold A.	The history of the placer mining era in the state of Idaho, 1939.

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OREGON TOPOGRAPHIC MAPPING

Despite the increased rate of topographic mapping in Oregon during World War II by the U.S. Geological Survey and the Army Engineers, only 38.2 percent of the state has been covered. Much of the state west of the Cascades has been mapped topographically, although some of it dates back to 1893. Oregon ranks thirtieth in the percentage of area mapped in the forty-eight states. Ten states have been completely mapped, while Minnesota with 11.4 percent stands at the bottom of the list. Neighboring states all have higher percentages of areas mapped. Nevada has 40 percent, Idaho 46.1 percent, Washington 65.6 percent, and California 83.9 percent.

The above data was obtained from the annual report of the Secretary of the Interior for 1947.

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NONFERROUS METAL MARKETS

Following are extracts from E&MJ Metal and Mineral Markets, March 11, 1948:

Copper

All important sellers have opened their books for April business and all hands report a lively interest for copper from consumers, particularly the wire and cable division. In fact, the demand for March copper has not yet dried up completely. The price situation in the domestic market was about unchanged, with the undertone on nearby positions firm. Business booked was on the basis of 21½c., Valley.

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Lead

Attention of both buyers and sellers of lead again centered in the labor situation in Mexico. The strike at Monterrey has moved into its second week, with no clear indications of when the work stoppage will end. However, hope for an early settlement has not been abandoned. Consumers here continued to beg for lead and the tight situation in the metal shows no signs of easing. Makers of replacement batteries, who have been operating at an unusually high rate, are encountering increased competition for business.

Quotations were firm at 15c., New York, and 14.80 c., St. Louis. Sales of common lead for the week that ended yesterday totaled 4,908 tons.

Zinc

Buyers in need of Prime Western zinc for nearby delivery found it difficult to obtain the metal. Most producers appear to be well sold up so far as April metal is concerned. The situation in Special High Grade also remains firm, but sellers are wondering whether the demand will continue at current high levels over the summer period. There were indications that consumers were not so anxious about entering into forward commitments.

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Tungsten

Recent business in domestic scheelite was concluded on the unchanged basis of $30 per unit of WO_3. In regard to imported tungsten ores, the market has turned inactive and quotations were more or less nominal. On foreign ore, in bond, prices named ranged from $20.50 to $21.50 per unit.

Domestic production of tungsten ore, basis 60 percent WO_3, amounted to 1,028 tons in the fourth quarter of 1947, against 900 tons in the third quarter, the Bureau of Mines reports. Imports for consumption in the Oct.-Dec. period totaled 2,311 tons. Consumption in the fourth quarter was estimated at 2,074 tons.

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Quicksilver

Demand for quicksilver was moderate. Consumers remain confused over the supply situation, owing chiefly to uncertainty over what foreign producers are likely to do pricewise to attract buyers. The need for dollar exchange remains a factor in most countries that normally export the metal in volume. In spite of this uncertainty, marketing of foreign quicksilver has been less erratic in recent weeks. Quotations on spot continued unchanged at $76-$78 per flask, depending on quantity.

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O&C LANDS BILL PASSED BY HOUSE

O&C lands, about 2,500,000 acres in western Oregon, will be reopened to entry and location if a bill which passed the House of Representatives on March 1 is passed by the Senate. The bill is H.R.5049 introduced by Representative Harris Ellsworth. Senator Guy Cordon has secured authority from a Senate subcommittee of the Interior and Insular Affairs Committee to report H.R.5049 favorably to the full committee.

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