

until the value of that information is appreciated in San Francisco, New York, Boston, and elsewhere, at least to the degree that business interests will provide the instruments as a measure of self-protection.

In the mean time the seismometers have been made and tested at Pasadena, where they have proved their efficiency by registering as many as two hundred micro-tremors a year. This state of activity is not what we would expect during a period of quiet. It might occur before a relieving shock or soon after one, but in the latter case the great shock must have occurred recently, and that is not the fact.

To sum up for southern California: Sixty-eight years have passed since the last general earthquake; severe strain is indicated by local shocks, displacements of mountains, and seismometric records; in 1852 a disturbance similar to that of 1925 preceded the relieving earthquake of 1857. Will history repeat?

For northern California the facts are: It is only 16 years since the greatest relieving shock recorded in that province; slight, though sensible tremors occur from time to time; they are not as strong as we would expect fore-shocks to be; the pressure which moved mountains has been relaxed. The best guess seems to be that the strain has begun to re-accumulate, but is not likely to reach a critical condition for two or three decades.

As regards New England we know that the conditions are very different from those in California. Intervals between relieving shocks are much longer; distinct fore-shocks have not been recognized; movements of mountain peaks may have occurred, but are unknown; seismometric records of micro-tremors are lacking. The St. Lawrence earthquake of February 28, 1925, no doubt relieved the strain within a considerable area. Does that area include New England? I do not know. Does it include New York? I cannot guess! The poverty of information is lamentable. We face two possibilities, as far apart as the poles: (1) the strain is relieved, we need not expect another severe shock in a century or two. Or (2) the strain is not relieved; it has been increased by the failure of one part of the continental structure, which brings the pressure to bear on another; if so, we may expect renewed activity soon. No light leads in either direction.

New York, Philadelphia, Washington are in a seismic belt where shocks have been so rare and so slight that we hardly expect them. It may be a safe guess that no earthquake of any severity will ever affect those cities. And yet - there was the Charleston earthquake of 1886! A great shock, its intrusion upon our fancied security gives one pause. I wish seismometers had been longer in use, that they were more generally installed today.

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#### TETRAETHYL LEAD GAS FOUND NOT DANGEROUS

Tetraethyl lead "knockless" gasoline is safe to handle and use as fuel, though the anti-knock compound itself is still recognized as dangerous in its concentrated form. This is the gist of the findings of the special committee of the U. S. Public Health Service that has been investigating the problem brought up by the alleged "lead-gas" poisonings some months ago.

The committee examined 252 men, most of them car owners and users, employees

in garages, power plants and public service corporations in Dayton and Cincinnati, Ohio. Part of them handled and used gasoline treated with tetraethyl lead, and the others only untreated gasoline. One group of 60 was exposed to lead as a direct industrial hazard. Thorough physical examinations were made of all of them by doctors, who were not permitted to know which of their subjects were exposed to the ethyl-gas and which were not. The general tenor of the results of these examinations is to the effect that no health differences can be found among these men that can be traced to their exposure to the treated gasoline.

It was found that practically all of the men eliminated lead from their bodies, whether they were exposed to the suspected fuel or not. This indicated that they were absorbing lead from other sources. The committee found appreciable quantities of lead in the dust in garages, presumably from tires, battery plates, etc. The suggestion is also offered that lead may be taken in with drinking water, from plumbing consisting in part of lead pipes.

In addition to the lead in garages, the committee found that the air in the Dayton Municipal Garage contained from two to seven parts per ten thousand of the poisonous carbon monoxide gas when cars were operating.

Representatives of the American Federation of Labor, of the U. S. Public Health Service and of the manufacturers of ethyl gasoline are now drawing up a system of regulations to apply to the manufacture, blending and distribution of ethyl gasoline. These recommendations are expected to form a basis for any future state and municipal regulations on the subject. The sale of anti-knock gasoline, which has been voluntarily suspended during the investigation, will probably be resumed in a few days, except where prohibited by local authorities.

The committee summarized its findings as follows:

"On the basis of this investigation, the committee feels that the following general conclusions are justified:

"1. Drivers of cars using ethyl gasoline as a fuel and in which the concentration of tetraethyl lead was not greater than one part to 1500 parts by volume of gasoline, showed no definite signs of lead absorption after exposures approximating two years.

"2. Employees of garages engaged in the handling and repairing of automobiles and employees of automobile service stations may show evidence of lead absorption and storage, as indicated by the lead content of the feces and the appearance of stippled cells in the blood. In garages and stations in which ethyl gasoline was used, the amount of apparent absorption and storage was somewhat increased, but the effect was slight in comparison with that shown by workers in other industries when there was a severe lead hazard and for the periods of exposures studied was not sufficient to produce detectible symptoms of lead poisoning.

"3. In the regions in which ethyl gasoline has been used to the greatest extent as a motor fuel for a period of between two and three years, no definite cases have been discovered of recognizable lead poisoning or other disease resulting from the use of ethyl gasoline."

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