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U. S. PATENT OFFICE

DEPPE MOTORS CORPORATION

151 CHURCH STREET
NEW YORK CITY, U. S. - A.

SUPERHEATED
GAS
ENGINES
PATENTS ISSUED AND PENDING

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1924 NOV 21 AM 9 25

INTERIOR DEPARTMENT
BUREAU OF MINES
WASHINGTON, D.C.

November 15, 1924.

Mr. H. Foster Bain,
Director Bureau of Mines,
Washington, D.C.

~~RECEIVED~~
Files

Dear Sir:

Please note the attached article from the New York Times of November 13, 1924, entitled:

"TETRAETHYL LEAD
IN VICTIM'S BRAIN".

The facts outlined in the article once again confirm the observations of all physicians familiar with the subject of lead poisoning.

Lead Compounds are poisonous, cumulative, toxic and fatal when lethal doses are reached.

Lead poison steadily absorbed by the human tissues even in minute amounts, tends to superinduce other complications before the fatal proportions are reached.

Any dopes for fuels for gas engines should avoid such poisons as lead compounds.

I am sure you will see why I have so vigorously opposed the use of Ethyl Gas produced and sold by the Standard Oil Co. of New Jersey, General Motors and Dupont interests, on the grounds of protecting public health and welfare primarily, aside from the fact they are only suggested because of refusal of motor works to properly equip engines for fuels fixed by the U. S. Government Specifications.

Yours sincerely,

W. Deppe

Enc.

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MES, THURSDAY, NOVEMBER 13, 1924.

ERRUPTS GREENWICH

ner With Pistol Ladder With- of.

York Times. Nov. 12.—With a against his ribs Paul R. Bonner enwich, a leather son of David Bon- blisher, was gruf- glar to go down- ins blown out." r were at dinner l steps in a room ld them. Followed und Mrs. Bonner lgate. is room, Mr. Bon- a young man who id who pressed the er's chest and or- rs. The Bonners pilled with the or- r escaped through a ladder he had front porch. Mr. ght that as far as ascertain nothing wo weeks, three reenwich residents Jewelry valued at aroid Lloyd Rock- \$18,000; George S. resly N. Guthrie, s were all during

Y BEFORE 30.

utor in the Will njamin. a the conduct and to marry before ultivate friendship n, were among the l of Max Benjamin, Surrogate's Court. l also contained to the decedent's ling an investment state in realty, and : a business. The is not reported. part to the widow, min, and a daugh- s old, all of whom l Street, Brooklyn. l was a realty in- on, who is named trust fund of \$15,000 of himself and his income for her edu- include a study of , daughter marries 000. This fund, the ould be invested in and the property

TETRAETHYL LEAD IN VICTIM'S BRAIN

Analysis Reveals 11 1/2 Grains of Lead Compounds in Body of Standard Oil Worker.

EXHAUSTIVE TESTS MADE

Medical Examiner Says Amount of the Metal Absorbed Was "Astonishingly Large."

Half a milligram of tetraethyl lead has been recovered in the chemical laboratory of the Chief Medical Examiner's office, it was announced yesterday, from the brain of Walter Dymock, one of the Standard Oil employes at Elizabeth who died after breathing the so-called "looney gas." A total of seven and two-tenth grains of lead was recovered from the body, and it was estimated that a full analysis would show about eleven and one-half grains of lead in the man's system at the time of death. This investigation, which was necessary to establish the cause of death scientifically, was one of the two most difficult and exhaustive works ever required of the Chief Medical Examiner's laboratory, which is constantly at work unraveling similar problems in homicide, suicide and accident cases. The other investigation of comparable length and difficulty was in the case of a man who died from an overdose of a complex synthetic medicine, composed largely of arsenic. The analysis required three weeks of practically continuous effort by Dr. Alexander O. Gettler, City Chemist. Hundreds of steps were required in the chemical procedure which recovered the lead. A variety of lead compounds were found in the body. These derivatives of tetraethyl lead represented the efforts of the body to metabolize, or digest, the poison. Body Produces Some Lead. About one-fourth of a grain of the original tetraethyl lead was found, the remainder being other lead compounds produced by the reducing agents of the blood stream in the effort to protect the body against the deadly invader. From the brain a total of 10.6 milligrams of lead substances were taken. About the same quantity was taken from the lungs, indicating that the main source of intake of lead was the lungs, although part of it entered the

body through the skin. From the bones 53.4 milligrams were taken. In chronic cases of lead poisoning, such as painters and other lead workers suffer, the lead is gradually absorbed into the body and stored away in the bones, the bad effects making their appearance after the bones have been supersaturated with the metal. The amount of lead in the blood stream has not yet been determined. "This is one of the most difficult of many difficult investigations of the kind which have been carried on at this laboratory," said Dr. Norris. "This was the first work of its kind ever done, so far as I know. Dr. Gettler had not only to do the work, but to invent a considerable part of the method of doing it. "It was impossible, from this investigation, to tell how much lead vapor is enough to kill a person. There was an astonishingly large quantity of the metal in the brain and body of this man, proving the high absorptiveness of the gas. Deadliness Discovered in 1854. "The fact that it was readily absorbed and highly poisonous has been known ever since tetraethyl lead was discovered in Germany in about 1854, and it has not been used in industry during most of the seventy years since then because of its known deadliness." Dr. Norris said that this investigation, while it showed the extreme hazard in the manufacture of the gas, did not throw any light on the question whether the tetraethyl lead was still dangerous when diluted with 1,000 parts of gasoline and burned in motors. This is a source of acute danger to the general public, according to Dr. Yandell Henderson, Professor of Applied Physiology at Yale, but experts of the Standard Oil Company insist that no danger is involved in it at all. The use of gasoline mixed with lead is barred from the streets of New York City, from all parts of New Jersey and Philadelphia at present, pending conclusive findings as to the danger or harmlessness of this product. The findings of the New York City laboratory will be furnished to the Grand Jury at Elizabeth, N. J., which is investigating to discover whether criminal negligence was involved in the death of five men who breathed this gas. About fifty others have been under treatment. All of these have been released as cured with the exception of thirteen, who are still patients at the Reconstruction Hospital in this city. Disney Gets Conservation Post. ALBANY, N. Y., Nov. 12.—The appointment of Francis X. Disney of Elmira as Deputy Conservation Commissioner was announced today by Conservation Commissioner Alexander MacDonald. The salary is \$7,000 a year. Mr. Disney served eight years as Secretary of the Public Service Commission, Second District, and for two years has been head of the Conservation Bureau in the office of the Attorney General. Case Postponed for Football Game. PORTLAND, Me., Nov. 12.—Football had its day in court today. When a liquor case was continued to Nov. 22 the counsel for the defense said that was the day of the Harvard-Yale classic, for which he had tickets. "I guess it is a good excuse when it is offered in time," Judge Peabody commented as he set trial for another date.

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HANSHAW'S A SPEND THE WIN THE MOST HEALTHY ICA: WE ARE NOW WINTER SEASON: RATE-RATES: SPEC MANENT GUESTS ABLE ROOMS, RE MODERN CONVEN DISTANCE, PION HOTEL HANSHAW

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BUSINESS RECORDS

PROCEEDINGS.	Baldwin, Wm.—Masol Realty Corp. \$2,774.70	Brogan, Charles—J. Van Reen. \$35,052.60
ed—Against	Crossman, Alex. R.—F. B. McFall. \$1,357.00	Hackbarth, Alfred C.—A. Krimot. \$401.52
IERD & BRO., silks.	Cohen, Louis J.—American Taximeter Co. \$707.01	Judson, Sidney, Samuel Leibowitz & Morris
oy M. Janowitz on a	Caso, Antonio—C. E. Chalmers; costs. \$110.24	Gulldin—United Plan & Sharing Corp. \$439.42
am H. Brady was ap-	Caso, Bastiano, by gdu—C. E. Chalmers; costs. \$118.24	Marino, Louis A.—Pure Oil Co. \$137.55
\$8,000 bond, by Judge	Crump & Lungreen, Inc.—H. A. Keun. \$183.55	New River Lumber Co.—A. H. Elliott. \$1,462.77
about \$20,000; assets,	Chester, George R.—Encyclopaedia Britannica Corp. \$149.32	Same—L. Warren. \$1,816.23
silks and woollens, 67	Cohen, Joseph—O. Englander. \$273.06	Rogalln, leadore—Bordens Farin Products Co. \$874.45
klyn, by Noam Wol-	Cannon, James J.—Central Cigar Mfg. Co. \$138.45	Side Car Vehicle Mfg. Co.—Toys & Novelties Pub. Co. \$314.20
Inc, dyemakers, tool-	Chang, Henry—M. Bork et al. \$185.90	Steffen & Braham Co., Inc.—Gramatan Coal & Supply Co. \$247.03
nachinists, 120 Atkins	Classie Mills Co, Inc.—Harris Bros Corp; costs. \$121.16	United Brick Co. of N. Y., Inc.—Kovates & Knauber Iron Works, Inc. \$331.07
by Bedford Plating	Col. Frank—Rothschilde Bernstein, Inc. \$147.45	Wells, Adolph—City \$147.45
Polittan Iron Foundry.		
er. "Inkerhof" \$1,600.		

SCIENTIFIC AMERICAN

(ESTABLISHED 1845)

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THE JOURNAL
OF PRACTICAL
INFORMATION

PUBLISHING COMPANY

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PUBLISHERS
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WOOLWORTH BUILDING
233 BROADWAY NEW YORK

October 21, 1924

Dr. R. R. Sayers,
Chief Surgeon
U. S. Bureau of Mines,
Washington, D.C.

RECEIVED
1924 OCT 23 AM 9 52

CHIEF SURGEON

My dear Dr. Sayers:

I am greatly obliged to you for your kind letter of the 16th inst., with regard to Tetra-ethyl Gasoline. Of course, we will keep this information entirely confidential.

I may say that the results which you are getting seem to me very surprising. Analysis of ethyl gas, made independently by our chemical experts, indicate that the treated gasoline as used in the engine contains approximately 2 grams of metallic lead per gallon of gasoline. This lead has to come out somewhere, and one would expect it to come out in the form either of powdered carbonate or powdered oxide. Both of these powders are well known to be extremely poisonous. Therefore, it seems to me very remarkable that you have had no symptoms of poisoning in your exposed animals with the amount of exposure to the exhaust gases which you have used. Of course, experiments are the final test, but have you any idea as to the reason why the poisoning has not been obtained?

I may say also, although this I must ask you, if you will, to keep confidential, that I am informed that a number of the garage employees of the Standard Oil Company in northern New Jersey are showing symptoms of lead poisoning, due presumably to the fact that the company is using the ethyl gas in this district. I have not confirmed this information, but it comes to me rather directly, and I am inclined to credit it. Of course, this fact, even if true, does not necessarily mean any toxicity of exhaust gases, as it might be explained by poisoning due to contact of the ethyl gas with the skin.

I have decided to go into this whole matter of the ethyl gas very definitely. It seems to me that there is a distinct danger of a widespread poisoning, and that it is the duty of

R. R. Sayers

Dr. R. R. Sayers:

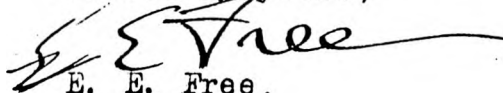
-2-

the Scientific American to get at the exact facts, and to make them public. Since you are investigating the thing, I think I would like to talk over the whole field with you, and to look over your experiments, if that is possible. Of course, we will agree not to quote you or the Bureau in any way, or to make any use of your results, except with your complete and specific approval. What I really want is to be perfectly fair about the whole thing, which means that I want to get all the possible facts from every possible source.

Are your experiments being carried out in Washington or elsewhere, and would it be agreeable to the Bureau to have me meet you somewhere, talk over the whole thing and look over the experiments?

In case Dr. Bain is still absent, and you should wish some assurance of my competence and honesty, I may say that a number of the Bureau of Mines officials are more or less acquainted with me, as are Judge Finney, (Assistant Secretary of the Interior), Dr. George Otis Smith, of the Geological Survey, Dr. Charles A. Parsons, of the American Chemical Society, and Dr. George A. Rankin, of the Chemical Warfare Service, etc.

Sincerely yours,


E. E. Free,
Editor

EEF:LD

October 15, 1924. ERS/SJD

Mr. E. E. Free.
SCIENTIFIC AMERICAN,
233 Broadway, New York.

SUBJECT: Tetra-ethyl gasoline

Dear Mr. Free:

Your letter to Dr. Bain, who is away from Washington, has been referred to me for reply.

The Bureau of Mines has been carrying out some studies to determine the possible toxicity of exhaust gases from an engine using gasoline containing tetra-ethyl lead. We have exposed many animals, including rabbits, guinea pigs, pigeons, dogs, and monkeys, to the exhaust gas diluted with air just sufficiently to prevent acute effects from carbon monoxide, that is, so that the air would contain from 0.01 to 0.03 per cent of carbon monoxide. The animals have been exposed in two groups, one group being exposed three hours daily and the other six hours daily. These experiments have been running for about ten months with no symptoms of lead poisoning in any animal. Recently we have increased the amount of tetra-ethyl lead in the gasoline to five times the amount now recommended for use in automobiles. This test has been running for some weeks without any apparent effects. We intend to increase the concentration of the tetra-ethyl lead in the gasoline to a point where symptoms of lead poisoning are obtained, if they are not obtained from the above.

During the experiments, animals have occasionally been killed to be examined for lead. No lead has been found in their bodies up to the present time; none has been killed since the higher concentration has been used, so we do not know what will be the findings.

As the study is still in progress, we do not care to draw definite conclusions and it is requested that none of the above be published. However, there have been many inquiries and demand for published statement of our findings and it may seem advisable a little later to get out a preliminary one. If this is done, a copy will be sent to you.

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We are intending to carry out further studies covering the possibility of poisoning from tetra-ethyl lead from any source that would affect the public. Of course, such studies take time and any statement at present would be a mere guess.

Yours very truly,

R. R. SAYERS
Chief Surgeon, U.S.B.of M.
Surgeon, U.S.P.H.S.

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CHIEF SURGEON

October 14, 1924

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Dr. H. Foster Bain,
Director of U.S. Bureau of Mines,
Washington, D. C.

INTERIOR DEPARTMENT
BUREAU OF MINES
WASHINGTON D.C.

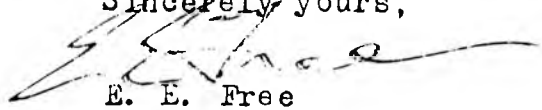
Dear Dr. Bain:

I have been somewhat concerned by the activity of the General Motors Company, and their related interests, in pushing the use of lead compounds in gasoline - the so-called "ethyl gas".

It strikes me, without knowing very much about the subject, that this is a rather dangerous procedure. Is it not possible that the lead in the gasoline will come out in the fumes in such a fashion as to produce lead dust in the air, and to raise at least a possibility of serious poisoning in places like Fifth Avenue, New York City, where the congestion of motor traffic is very great?

I think this is ^{the} kind of thing that the Scientific American ought to watch out for, and do something about in case the danger is really serious. I hear indirectly from the General Motors Company that the Bureau of Mines has tested the matter, and that you are about to ~~run~~ ^{issue} a very favorable report. If this is so, could you write me (confidentially if you wish) just what the Bureau has done, and what your engineers have concluded? Of course, I do not want this for publication, but merely to help me to formulate my own policy in the matter.

Sincerely yours,


E. E. Free
Editor

EEF:LD

12/23