

PROCEEDINGS, SIXTH ANNUAL MEDICAL MEETING

SOCONY-VACUUM OIL COMPANY, INC.

CHICAGO, ILLINOIS, NOVEMBER 1 and 2, 1951

Palmer House and Medical School, University of Chicago

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AGENDA

ANNUAL MEETING - SOCONY-VACUUM MEDICAL DEPARTMENT - 1951

Thursday, November 1st
Palmer House, Chicago

MORNING SESSION
(9:30 A.M. - 1:00 P.M.)

- I. Address of Welcome Bryan Reid
- II. Introduction of Guests and new Associates
Review of Medical Department Activities G.M. Saunders, M.D.
- III. PROBLEMS OF THE OLDER EMPLOYEE
- The Cardiac and Hypertensive Subject in Industry R.S. Palmer, M.D.
- The Present Status of our Truck Drivers G.M. Saunders, M.D.
- The Incidence of Peptic Ulcer in the Petroleum Industry M.N. Howard, M.D.
- Preparation for Retirement W.H. Montgomery
- IV. CANCER STUDIES
- Progress Report - A.P.I. Studies Marshall Clinton, M.D.
- Carcinogenic Properties of Some Petroleum Products William Smith, M.D.

AFTERNOON SESSION
(2 PM - 4:45 PM)

PROBLEMS CONCERNING EXAMINATIONS AND ADMINISTRATION

- V. The Significance of Medical Records C. F. Beatty
- Should Examinations be Compulsory C. A. Schulte
- The Value of Low Back-X-rays in Pre-placement Examinations E. P. Luongo, M.D.

PROBLEMS CONCERNING EXAMINATIONS AND ADMINISTRATION

- Shift Work in Relation to Age and Fatigue A. McLellan, M.D.

grow and hoped to soon have its own medical facility.)

I know that you are going to have a delightful day at the University of Chicago. I went there this Spring and visited Dr. Coggeshall, one of our great educators and a self-sacrificing doctor-director of this country. The biological sciences are doing great things for industry and their people in a broad sense. We can all be proud of their work.

If we can do anything to help make your stay here pleasant, just ask us. Mr. Copeland is pretty good at this and can handle anything. I leave you in his hands, knowing that he will do what you want. Please feel free to ask about anything you would like and he will arrange it. We are delighted to have you and hope you can come back again.

INTRODUCTORY REMARKS

by George H. Saunders, M.D.

EXPRESSION OF THANKS

On behalf of our medical staff everywhere, I wish to express the thanks of all of us to Mr. Bryan Reid and his staff, particularly to Mr. Copeland for acting as our host at this meeting and for attending to all the many details necessary for the organization.

ACTIVITIES OF SOCONY-VACUUM MEDICAL DEPARTMENTS

During the past year, the happening of greatest interest to all of us was the retirement of Dr. A.E. Hoag. He served for many years

with Socony-Vacuum. Sometimes in the face of many obstacles, he fought for the continued improvement of our medical services and showed himself to be a man of vision and ability. We have not lost his services entirely for we are privileged to call on him for advice from time to time. As you know, on his retirement I became Medical Director for our domestic operations as well as for our foreign activities.

Dr. Gilman S. Currier was appointed on January 1, 1951 as Director of our Medical Department at 26 Broadway on a full-time basis. Dr. Currier has had many years of experience in clinical medicine in the New York area and has been interested in compensation cases.

During the past year considerable thought has been given to medical security in the event of a bombing attack. At 26 Broadway, we have organized first aid squads. Thirty-two people have been trained by the Red Cross in their Instructor's Course with the idea that they in turn will train others. First aid kits have been supplied and plans have been made for blood grouping of the entire population and immunization against tetanus and typhoid and for distribution of medical teams throughout the building.

During the year, some progress has been made in health education by visual aids. The film "Guard Your Heart" had four showings at 26 Broadway to packed houses and has been shown at several places in the field.

Plans were completed for attaching an Industrial Hygienist to our medical staff. Mr. Arthur Pabst, formerly with Research & Development, was assigned to our medical department on September 1st of this year and he has been sent to Harvard for a year of special

training in industrial hygiene and toxicology.

During the past summer our New York Office had a senior medical student working during his vacation, helping us with our routine examinations and doing some of the laboratory work. We gained through his assistance and it is hoped that he learned something about our general principles and operation of medical activities in industry.

In our medical activities, other than New York, one important event was the opening of the very fine medical facility in Kansas City. Dr. H. M. Roberts was appointed Medical Director and Miss Elizabeth Ploger, as nurse.

Since the last meeting, there have been several changes among the nursing staff. When Miss Betty Maguire resigned from the Brooklyn Technical Service Laboratory, Mrs. Doris Krieger moved from the New York Office to take her place and Miss Anita Harris moved from Metuchen to New York to take Mrs. Krieger's place. Miss Lillian Dillard joined our nursing staff at Metuchen.

At the Chicago Division, Miss Theresa Carroll has replaced Mrs. Bracco.

In Boston, Miss Marian Dickeson succeeded Mrs. Sponberg.

Mrs. Ida Williamson is a new addition to the nursing staff at Paulsboro Refinery.

During the year, I was able to visit most of our installations but, unfortunately, I have not yet been able to get to our Detroit Office or to the refinery at Casper.

A brief summary of our medical activities may be of interest. In addition to Magnolia and General Petroleum, we have nineteen medical

installations which are staffed by sixteen physicians, only three of whom are full-time, and eighteen nurses. Company medical facilities cover about 12,500 or one-half of the 24,000 employees of Socony-Vacuum proper. During the year July 1, 1950 to July 1, 1951, there were 95,000 patient visits to our clinics or an average of about eight visits per employee per year. During the same period there were 3,000 periodic examinations recorded, about 25% of the covered population, and pre-placements number 1,800.

FOREIGN ACTIVITIES

In the foreign field some progress has been made. During the past year I visited the Colombian Petroleum Company operation in Colpet, Socony-Vacuum operations in Venezuela and recently I had the opportunity to inspect the activities of our affiliated companies in France, England, Germany, and Italy.

As a part of our professional training program, Dr. Virgil Scott, Associate Professor of Medicine at Washington University, spent about two weeks with the Colpet medical staff in Colombia and another two weeks with our medical staff in the hospital at Anaco, Venezuela, making ward rounds, giving lectures, and holding seminars on pertinent subjects. Dr. DeValera, medical director for Colombia was in this country for several weeks visiting representative hospitals and studying their supply tables and formularies. Dr. Angulo Rivas, of our Venezuelan medical staff, started on a year's post-graduate training in Internal Medicine at New York University-Bellevue Medical Center.

In Italy, plans have been made for a modern health service for Socony-Vacuum Italiana. Dr. Mario Russo, was appointed full-time

medical director responsible to the manager. An up-to-date, modern, well-equipped, medical department is being installed at the refinery in Naples, and will, I think, be one of the best in Europe.

INTRODUCTION OF GUESTS

We are fortunate in having with us today a number of distinguished guests, several of whom will participate in our program.

Dr. Robert S. Palmer, a classmate of mine at Harvard Medical School, many years ago, and now a leading cardiologist in Boston will speak to us later about some of the problems of the hypertensive in industry.

Dr. Robert Kehoe, Director of the Department of Industrial Medicine at the University of Cincinnati, and Director of the Kettering Laboratory, will give us some of his ideas on the organization of an industrial medical department. He has had many years of experience in dealing with industrial medical departments.

Dr. William Smith, on the faculty of the Institute of Occupational Medicine of New York University has devoted the past several years to the study of carcinogens. He will tell us some of the results of his investigations.

Dr. J.R. McMillan, Director of Standard-Vacuum Oil Company, one of our affiliated companies, is attending one of our medical meetings for the first time.

Dr. C. H. Schulte:

What is your opinion of the relative value of blood pressure in relation to exercise. In industry due to the fact that we do not have sufficient contact with the man to be examined we take the exercise tolerance test. We take the blood pressure in a relaxed condition, then exercise the patient, then take his blood pressure again. We take the blood pressure in a relaxed condition at two different times and at the end of three minutes we take it a third time and we have always found that there is a definite blood pressure ratio. The exercise tolerance test produces a lowered blood pressure in the majority of people. After the initial rise it lowers - later it is the same in any patient.

Dr. R. S. Palmer: I don't know enough about it to make any conclusions.

AN APPRAISAL OF OUR TRUCK DRIVERS - PRELIMINARY REPORT

by: G. M. Saunders, M. D.

INTRODUCTION

Recently, some concern has been expressed about the age and health of our truck drivers. It has been stated that they are growing older as a group and that possibly as they advance into the late fifties or early sixties, many will develop disabilities associated with aging which would make them unsafe as drivers. There has been speculation on the wisdom of developing a procedure for early retirement or for shifting

older drivers to other jobs. Because most of the ideas expressed have been based, not upon objective observations, but upon impressions, it was felt advisable to collect information on a representative sample of our driving group in order to define their present condition.

This is a preliminary report on data collected during the past several months. Although truck drivers constitute one of the largest job classifications in the United States, there is little available factual information on their health or on what constitutes a "safe" driver, or what physical conditions should disqualify an operator.

The Interstate Commerce Commission's Motor Carrier Safety Regulations, which concern the physical qualifications of drivers are vague, general and brief. Minimum qualifications require that a driver must not be suffering from any condition which might interfere with safe driving. A certificate of a satisfactory physical examination is required for each new driver, and there is nothing to prevent a motor carrier from requiring physical examinations of drivers in addition to those prescribed by rule.

MacFarland in discussing human factors in accident prevention reported little relationship between accidents and recorded physical defects. He suggested that possibly the various physical tests are not related to specific functional actions of drivers and therefore are not reliable and should be revised on a functional basis. The Esso Medical Department also stated that they observed no correlation between physical condition and accidents.

MacFarland reported further that physical measurements of truck drivers from various parts of the country are essentially the same. In

general they are large and muscular with strongly masculine build. Most good drivers are young, with an average age of 33 years, about 69 inches tall and weighing about 166 pounds. Last year, Dr. Quinby stated that the typical New England drivers were big men, tall and stocky, and tended to be overweight, to have mild hypertension and more than a normal incidence of glycosuria and diabetes. They tended to over-eat and at times to use alcohol to excess.

In a recent study of cardiovascular problems in the railroad industry it was reported that in the absence of evidence of marked vascular damage in the heart, kidney or brain, the affected individuals carried out their work successfully for a period of ten to fifteen years. Those with systolic blood pressures of 200 or more, and with other complications, were allowed to work except operating personnel who were given other jobs.

Another report stated that a level of blood pressure of 180/100 may be dangerous and that employees with blood pressure levels above those figures should not operate public vehicles.

The psychiatric and emotional makeup of drivers has received some attention. Studies of the accident prone automobile driver (Tilman and Hobbs), suggest that "a man drives as he lives". Unstable, erratic people who may come from a background of broken family life are liable to have frequent accidents and to have records of numerous traffic violations in the courts.

Evidence about the safety of the aging driver is confused and opinions differ. It has been stated that some of the physiological characteristics which are involved in motor vehicle operations, such as eye-hand and eye-foot coordination (steering and braking), and glare vision

(night driving), show steady deterioration with age beginning in the thirties. Nevertheless, the safety of driving increases up to fifty years of age and then declines rapidly during the next two decades, (Brozek, Scientific Monthly, June 1951). MacFarland believes that there is not sufficient evidence to warrant an arbitrary retirement age and that functional age is more important than chronological age. He, too, emphasizes the fact that older people are handicapped in their ability to see with poor light and therefore drivers over sixty years of age might be restricted to daylight operations.

There is no doubt that aging is often associated with lowered functional abilities and degenerative diseases which might seriously hamper the operator of a motor vehicle. Just what these conditions are and at what stage in their progress the subject should be removed from a driving job is not possible to explore in this report. However, it seems obvious that certain conditions are associated with sufficient extra hazards to warrant removal of the subject from a truck driving job. Some of these are: poor eyesight, uncorrected, severe deafness, severe hypertension, severe arteriosclerosis with evidence of vascular accidents in the cerebral coronary, or renal areas, poorly controlled diabetes, organic disease of the nervous system, epilepsy, psychoses and others.

METHODS OF PRESENT STUDY

As a result of preliminary discussion, it was felt that certain data on drivers ought to be available in order to classify them as fit or unfit for their jobs and in order to assess the potential hazard to safe

driving which might arise from demonstrated abnormalities.

Historical data should include a careful record of past job performance, including motor vehicle operations with a record of accidents and traffic violations. The Medical history should record all pertinent details of past health, including infectious diseases, injuries, surgical procedures and evidence of emotional or psychosomatic disturbances. The history of parents and siblings, especially concerning longevity and degenerative and cardio-vascular conditions should also be included. It is known that man inherits certain structural and tissue characteristics and potentials from his ancestors.

The physical appraisal of truck drivers should obviously be careful and complete with special attention to eyes, the cardiovascular system, and to the neuro-muscular apparatus. Emotional stability should also be carefully assessed.

At least a minimum of laboratory data should be obtained including a complete urinalysis, hemoglobin determination, examination of stained blood films, and a serologic test for syphilis. Chest x-rays should be made. Electrocardiographic tracings should be made at intervals on older individuals, probably after forty years of age. Other desirable tests may be suggested by the history and physical findings.

A form was devised listing the items considered essential and copies were sent to medical directors in five areas where there were known to be a concentration of truck drivers. The medical departments of these areas, Boston, New York City, Buffalo, Detroit and Los Angeles, were asked to transfer to these forms pertinent information from the drivers' most recent health records.

A code sheet was devised to permit transfer of the information to punch cards for tabulation and analysis.

RESULTS OF STUDY

Records are still being sent in from the field, and, therefore, a complete and detailed analysis and report is not possible at this time. This study will present a general picture of our driving group with regard to age, size, blood pressure, and significant abnormalities. It will comment on the absence of important data in most of our records and a few general recommendations will be made.

Size of Sample

A total of 850 records have been analyzed, the great majority of them from New England and California. Less than 150 are from Buffalo, New York City and Detroit. The total number of truck drivers in Socony-Vacuum and affiliated companies in this country, is probably in excess of 4,000 although an accurate figure cannot be given at present. Therefore, this sample represents about 20% of the total which is large enough to be reliable if it is a truly random one and not selected. It may be that the sample is biased toward the older age groups and pathologic conditions, especially where the numbers of records returned were relatively small and the observations must be interpreted with that in mind.

Age of Drivers

The average age of drivers is about 42.5 years but the most common age is in the late forties. Distributed by age groups, those less than forty years old make up a little more than one-third; those between forty

and fifty make up another one-third, and those over fifty years of age account for a little less than a third. There are significant differences between the age distribution of New England and California drivers. New England drivers are older with 77 percent being more than forty years old, while in California, only fifty percent fall in that age group. Of the total, only twenty-eight drivers, or a little more than three percent are more than 60 years of age. Available figures for Esso truck drivers indicate that their age distribution is similar to that of our total sample.

It is apparent that our drivers are predominately in the middle or older age groups and as a class are probably aging. This implies that more attention should be given to health maintenance with more frequent and more complete examinations.

Size of drivers

Our drivers are large men, tall and heavy. The average height is nearly five feet ten inches, with 43 percent being taller than that and 16 percent of them measuring more than six feet. In regard to body weight, nearly half of them weigh between 160 and 190 pounds, the median being about 170 pounds. Fourteen percent weigh more than 200 pounds, and sixteen percent weigh less than 150 pounds. As might be expected, weight increases with height. Among 130 drivers more than six feet tall, about one-third of them weigh more than 200 pounds. When age is related to weight, it is found that there is no indication of increased weight with age. Our figures for height and weight are similar to those given by MacFarland, who stated that the average truck driver is about five feet nine inches tall and weighs about 166 pounds.

Many of our drivers are overweight. Among the sample of 850, there are more than 170 classified as overweight or nearly one-fifth of the entire group. There is little observed difference in the proportion classed as overweight in those less than fifty years old and in those over that age.

Blood Pressure Levels

Our observations tend to bear out the suggestion that hypertension may be a common finding in truck drivers. A diagnosis of hypertension was made in six percent of men of all age groups. This finding was present in five percent of those less than fifty years old and in 8.3 percent of the older group. This is particularly significant since drivers are selected for their jobs on the basis of physical fitness. Diagnoses of hypertension were based upon tables given by Masters, Dublin and Marks, (J.A.M.A., August 26, 1950, see Appendix), and either systolic and diastolic pressures, or both, were above the upper limits for normal pressures as given in the table.

Systolic Blood Pressure

The median level of all observations was about 130 mm. Nearly five percent of the entire group had pressures of 180 mm. or more while in those more than fifty years of age almost ten percent had pressures above that level. If the figure of 200 mm. is taken as the dividing point between moderate and severe hypertension, it is found that (15 or) 2.8 percent of all drivers and (11 or) 4.1 percent of all those over fifty years of age have severe hypertension. Taking a level of 150 mm. as a dividing point, twenty percent of all drivers and thirty percent of those over fifty years of age had pressures above that level.

Pressure

of the drivers had pressures between 80 and 90 mm. as a critical level, it is found that 6.6 percent of 11.4 percent of those over fifty years of age have pressures. When 110 mm. is taken as the dividing line and nearly 10 percent of those more than fifty years are above that level.

Heart

Cardiac findings or demonstrable arteriosclerosis was present. The frequency was less than one percent among cars old and about eight percent or more than ten times per group. Many of the conditions noted were probably minor but were felt by the examiner to be of sufficient importance to be in the record.

Abnormalities of the peripheral vascular system were noted in all cases. Some abnormality was recorded in 96 or nearly twelve percent of the group, in eight percent of those less than forty years of age and in eight percent of those more than fifty. These included a few, varicose veins (five percent) and hemorrhoids

ECG diagrams were recorded in thirty-one reports and were normal in seven, all of whom were more than fifty years of age.

Reflexes were described in most cases, and were abnormal in some. At achilles and plantar reflexes, and Rensberg tests were

recorded in only about 100 records with few abnormalities. Tests for vibratory perception were recorded in only 94 cases of which three were stated to be abnormal, either diminished or absent.

The Skeletal System

Observations were recorded in less than one-half of the entire group. Abnormalities of the spine were noted in thirty-nine cases and were commoner in the older age groups. Abnormalities of the long bones were listed in eight cases.

Examination of the Eyes

Little information was given regarding the condition of the lids or ocular movements. Visual acuity for distance was reported in all but thirty-two cases. Vision was below normal and uncorrected in fifty-six and below normal but corrected in 192 cases. From this we may assume that nearly twenty-five percent of our drivers wear lenses to correct for distant vision and that nearly seven percent have defective distant vision which is uncorrected. Tests for close vision were not recorded in 364 cases, were said to be normal in 410 and abnormal and uncorrected in thirty-two, abnormal but corrected with lenses in forty-four. Color vision tests were not listed in 115 cases or nearly fourteen percent of the group. Of those tested, abnormal color vision was noted in seventeen cases or 2.3 percent. Results of examination of eye grounds were recorded in only 123 men or about 15 percent and were listed as abnormal in four or about 3.2 percent.

Laboratory Tests

Urinalysis: Results were listed in the majority but in many there was no record and in most cases the examinations were incomplete. Specific

gravity was missing in 312. The reaction was not given in 780. Tests for albumin were not recorded in 80 and were positive in nineteen or 2.5 percent of the remainder. Tests for sugar were lacking in seventy-nine and were positive in thirteen or 1.7 percent. Examination of the sediment was listed in less than twenty percent of the total.

Hematology: A red cell count was recorded in nineteen cases; hemoglobin determination in forty-nine; white blood count in twenty and in no case was there a recording of examination of a stained blood film.

Results of serologic tests for syphilis were given in only 264 cases or less than one third of the total. Of these, two gave positive reactions.

Chest x-rays were recorded in only thirty-six cases. Cardiac enlargement was described in two and abnormality of the aorta in one.

Medical Histories

In general the historical part of the records was unproductive. Little information was given about previous illnesses except for accounts of surgical procedures. Family histories were non-existent. Data on driving accidents were missing in many cases when the records were first received but it was possible to secure this information on 671 drivers. In slightly more than half, records indicated one or more accidents on the job significant enough to be recorded. The proportion with an accident history increased slightly with age which is to be expected since accidents accumulate with duration of driving experience which in turn is greater in the older age groups.

Deficiencies in the Records

It is apparent from this study that important items of

information are lacking in our health records. These include, the historical data already mentioned, and items concerning physical examinations and laboratory tests.

In order to make our records more nearly complete and of greater value, certain recommendations for your consideration appear to be in order. Medical histories should include details about the past health, emotional reactions and essential items in the family history. More complete accident data should be entered in medical records.

Concerning the physical examinations, it is recommended that negative as well as positive findings be recorded and that some additional observations are made. In the examination of eyes, the results of tests for visual acuity for both distant and close vision should be given as well as results of color vision tests. The condition of the lids should be noted as well as the ocular movements. Examination of the fundi is also recommended. Examination of the ears should include results of tests for auditory acuity and an otoscopic examination.

Cardiovascular System: Blood pressure measurements should be repeated on more than one occasion. The condition of peripheral vessels should be recorded. Electrocardiograms should be made on all truck drivers over forty years of age at intervals to be decided. Chest x-rays should be a routine part of the pre-placement examination and should be repeated at suitable intervals.

The Skeletal System: Special attention should be paid to the spine in relation to mobility, pain on motion, tenderness on percussion and any evidence of abnormality should be noted.

Neuromuscular system: Records should be made of observation of deep reflexes.

Laboratory Procedures: Urinalyses should be complete and should include an examination of sediment. Hemoglobin determinations and examination of stained blood films are desirable. Serologic tests for syphilis should be routine procedure on all pre-placement examinations and should be repeated at suitable intervals thereafter, particularly in the younger men. Other laboratory tests should be done as indicated.

SUMMARY AND CONCLUSIONS

1. Medical reports on a sample of 850 truck drivers have been studied.
2. About one-half of them are more than forty-five and nearly one-third are more than fifty years old.
3. California drivers are generally younger than those from New England.
4. As a group, the drivers appear to be aging.
5. Structurally they are large men both in height and weight and nearly twenty percent were classed as overweight.
6. Hypertension is a relatively common finding and this diagnosis was made in nearly five percent of those less than fifty years old and in more than eight percent of the older group.
7. Evidence of cardiac abnormality or arteriosclerosis was noted in about four percent. The frequency of these conditions is ten times greater in those over fifty years old than in the younger group.
8. Varicose veins and hemorrhoids are not uncommon.
9. Visual acuity was found to be diminished in a fairly large

proportion of men, corrected by lenses in most instances and apparently about one-fourth of the drivers wear glasses.

10. Albuminuria was recorded in 2.5 percent and glycosuria in nearly two percent of those tested.

THE INCIDENCE OF PEPTIC ULCER IN THE PETROLEUM INDUSTRY

by: Max N. Howard, M. D.

It appears to be axiomatic that the number of words written, and spoken, on any given subject is in inverse proportion to the amount of factual information known about that subject. Thus the medical literature contains reams of articles on the subject of causation of peptic ulcer. With the etiology of gastric and duodenal ulcers still to be established, it is only natural that the discussion of the various factors supposedly related to their development should be marked by controversy.

Eusterman and others, in discussing the origin of peptic ulcers list the following theories:

1. The Vascular Theory of Virchow and Hauser
2. The Chemical or Corrosive Theory of Chronheim
3. The Gastritis Theory of Konjetzny
4. The Infectious Theory of Billings and Roschow
5. The Traumatic Theory
6. The Mechanical Theory of Aschoff
7. The Endocrine Theory