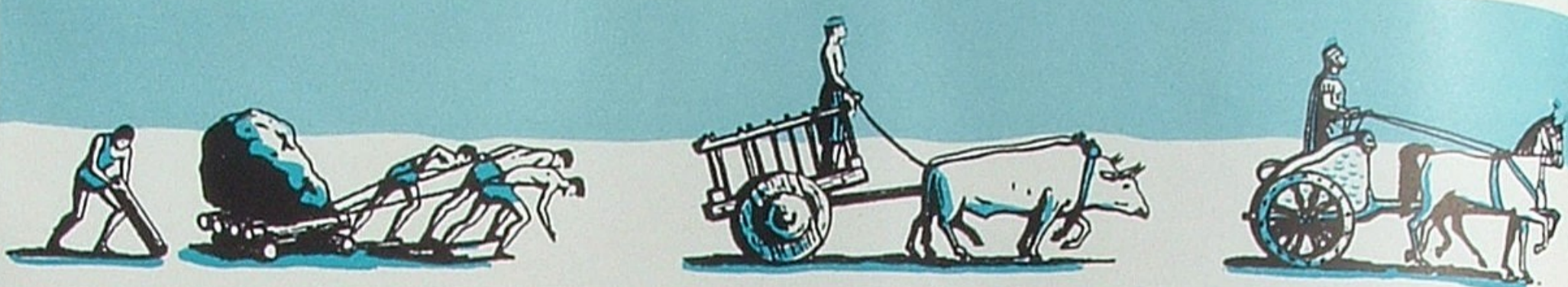


The Road to
ROYAL
Lubrication

"On Tour"

APRIL - MAY 1953

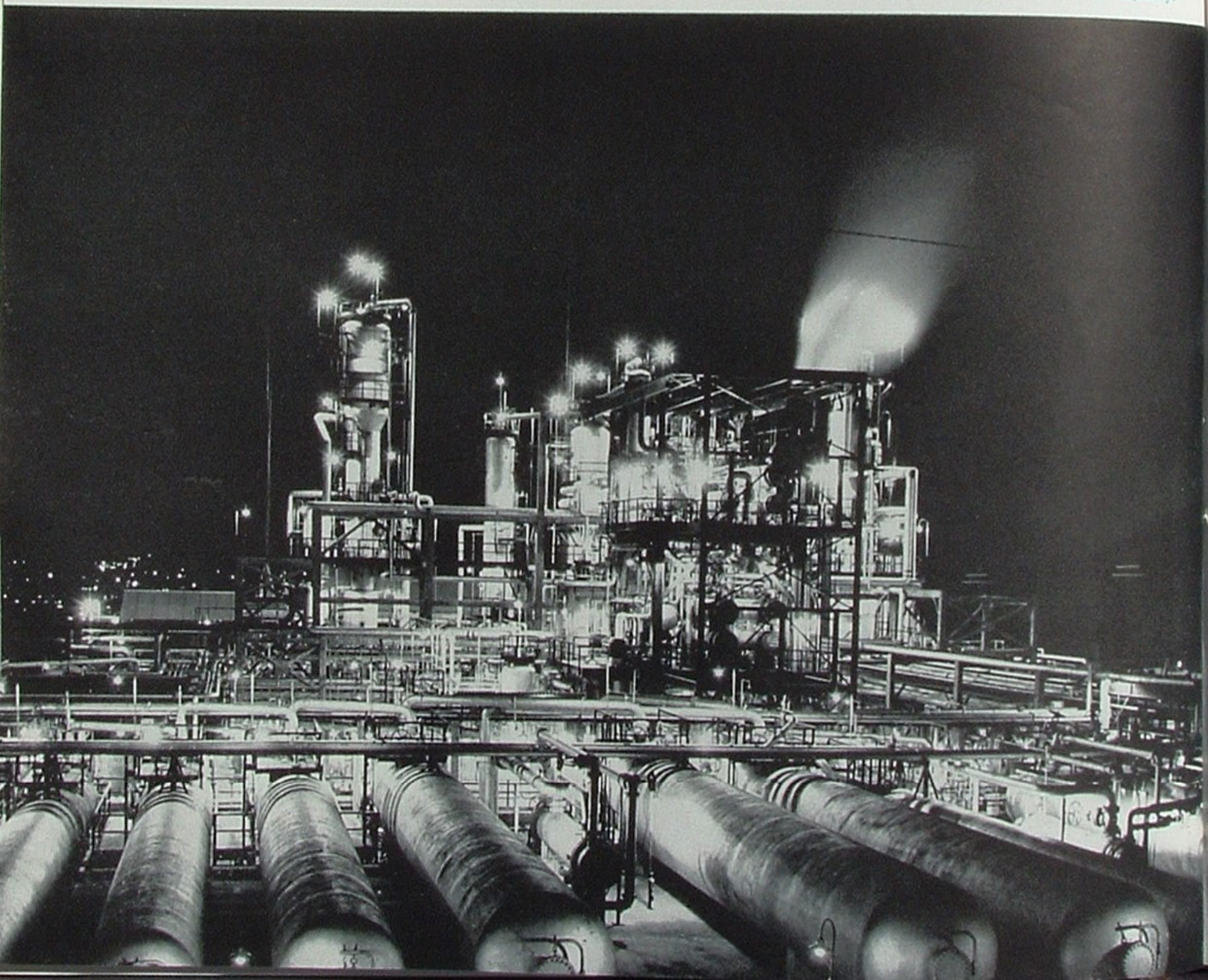


TO F. H. OTT OF HOME OFFICE, C. R. INGELS OF OLEUM REFINERY, B. T. ANDERSON, C. C. MOORE, DR. C. E. WILSON OF BREA RESEARCH AND NUMEROUS OF THEIR UNION OIL ASSOCIATES ON TOUR IS GRATEFUL FOR INFORMATION AND GUIDANCE IN PREPARING THIS ACCOUNT. IF THE FACTS PROVE USEFUL AND INFORMATIVE TO UNION OIL PEOPLE, WE SHALL CONSIDER THE JOURNEY MOST PLEASANT AND WORTHWHILE.

from The Industrial Relations Department

The Road to

Millions of wheels in industry and on the highway today depend for their lubrication upon such petroleum industry facilities as our Duo Sol Unit 220 at Oleum Refinery.





ROYAL Lubrication

The Wheel The wheel is so commonplace in this modern machine age that few of us pay proper respect to its invention. True, it is a fairly simple mechanism—one that might have been suggested to our ancestors by a rolling stone. But its adaption to the service of mankind was, and continues to be, ingenious.

Recorded history fails to tell us where, when or by whom the wheel was first put to use. We know only—from old writings, carvings and paintings—that carts and chariots were used by the ancient Sumerians and Egyptians, and that similar conveyances were known to a few other pre-Christian peoples. Nevertheless, many primitive nations and tribes trudged on century after century, apparently without the benefit of wheels.

Probably the first wheeled vehicle ever built moved on a pair of wooden discs laboriously carved from a section of tree trunk. A stout pole, with its ends secured to the centers of the two discs, may have served as an axle. Perhaps a carrying platform or rack, with a shaft for guiding and pulling, was somehow saddled between the wheels. Whether the axle remained stationary as the wheels revolved around it, or the rigidly attached wheels and axle both revolved under the rack, are questions for speculation. But there is no debating that the inventor quickly ran into trouble. Where moving parts rubbed together, an ominous sound developed. Soon the grating surfaces grew hot and began to smoke from friction. Worst of all, the rubbing parts gave evidence of rapid wear. The vehicle was a failure—unless something could be done to arrest friction.

It must have been about this same time that man began his earliest experiments in lubrication. The inventor and his advisers probably tried water, mud or any other type of slippery substance at hand that might halt the inroads of heat and friction. And sometime during the course of that early research they found a commodity of great merit. It may have been oil of the

petroleum variety, for we know that chariots of the Egyptian kings were greased with "mum" or pitch from oil seeps existing in that country. However, it is more likely that animal fats were first used, because, down through the many centuries that followed, most of the world's axles were greased with products made from beef and mutton tallow, lard or whale oil.

Indeed, many things have happened to the wheel since that ancient day of its earliest inception. It has lent itself to millions of changes and refinements. Now it not only carries us and our worldly goods from place to place, but tills and harvests our fields, does the hardest work in our mines and factories, helps to generate our power, provides us with relaxation and entertainment, even measures the time of day. Without wheels or a knowledge of them, civilization would skid promptly and chaotically back to the drudgery of former times.

But in paying tribute to this great invention, let us not forget the silent partner in its success—oil. This equally commonplace and indispensable servant of our age rescued the wheel from failure and has marched side by side down through the centuries with all wheels in their every revolution and evolution.

Animal fats long ago proved unequal to the growing demand for better, cheaper and more abundant lubricants. However, in 1859—when sea-going oil men were beginning to complain about a scarcity of whales—a pioneer oil well was drilled in Pennsylvania, opening a new source of supply. Fortunately, this event preceded the automobile and most other machines now in use. For without the volume and variety of products thus made available, few machines would be in operation today.

We owe much to the wheel and quite as much to the thin, tough film of lubricant that keeps it revolving year after year. And it is partly to stimulate this appreciation that ON TOUR offers the following facts about lubricating oils and their manufacture.

The Evaluation of Oils

Soon after the petroleum industry began to expand from its point of origin in Pennsylvania, crude oil was found to be a substance of extremely varied and inconsistent composition. Even when careful refining methods were used to extract similar lubricating oil fractions from two different crudes, it was found oftentimes that the refined products were dissimilar.

These observations led to extensive analyses and eventually to a standardization of tests through which the properties of lubricating oils could be measured.

For example, the *gravity* of an oil, or the relationship of its weight to volume, is determined by measuring the depth to which a hydrometer will sink in the oil sample. Early chemists used gravity measurements to identify the source of an oil, and *source* was one of their principal assurances of quality. Today, due to improved refining techniques, gravity tests are not the most reliable indications of an oil's source.

Flash and *fire* tests are conducted by gradually raising the temperature of an oil sample and igniting its vapors. The temperature at which enough of the light oil particles vaporize to produce the first visible flash is recorded as the oil's *flash point*. The higher temperature at which it gives off enough vapors to produce a continuous flame is the sample's *fire point*. Lubricants having a high flash point are preferred because of their lower content of such unstable materials as kerosene and lighter fractions. Oils having a relatively high fire point are regarded as being better able to withstand service under high temperature conditions.

Carbon residue tests are conducted by removing, through a destructive distillation or controlled boiling-burning process, all liquid fractions of a sample and weighing the remaining deposit of carbon. This provides a good indication of the oil's *cracking* or decomposition tendencies under high-heat operating conditions.

Viscosity, the measure of an oil's resistance to flow, is gauged by means of a viscosimeter. The sample, after being heated to a prescribed temperature, is allowed to flow through a standardized orifice. The length of time in seconds required for a given amount to pass through the orifice determines the oil's viscosity number. The "SAE" numbers now used to classify oils express viscosities according to a grade defining system adopted by the Society of Automotive Engineers.

The supreme test of a motor oil is its day to day performance. Therefore, our Royal Triton 5-20 was given thousands of miles of road tests in this fleet of cars.

It was found many years ago that two oils having the same viscosity at, say, 75 degrees F. might vary considerably from each other at the higher operating temperatures of a motor. Accordingly, engineers devised a means of plotting an oil's viscosity-temperature characteristics, and began referring to such pattern of change as the oil's *viscosity index*. Thus, an oil that is not inclined to show pronounced viscosity changes throughout various temperatures is said to have a high viscosity index. Obviously such an oil is preferred for use under widely varying operating temperatures.

Other tests adopted by chemists and engineers in evaluating lubricating oil include *color* tests, to measure the presence of useless and sometimes objectionable color bodies; *sulfated residue* tests, to measure the presence



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of metallic substances and additives; *pour point* determination, to establish the lowest temperatures at which different oils will flow; and so on.

Most of these tests are useful and important to petroleum chemists engaged in manufacturing the highest quality of uncompounded lubricating oil stocks. But when applied to today's best ready-for-the-market lubricants, some of the older measuring sticks are less indicative of merit than ever before. In recent years compounds have been discovered which, when added to an oil, give it far better performance characteristics than those provided by nature.

The supreme test of any oil is its day to day performance in numerous types of machines and under the

widest scope of operating conditions. However, such tests are not burdened on the consumer. Instead, research engineers are constantly at work subjecting every new product and product improvement to service tests of all sorts. Laboratory engines, for instance, subject a motor oil to every condition and extreme it may ever be expected to encounter. Then in automobiles—sometimes in fleets of automobiles—the oil embarks on thousands of miles of road tests. It is thoroughly measured, thoroughly compared in the great laboratory of practical use, thereby corroborating or upsetting earlier conclusions. When such a product is advertised as "The World's Finest Motor Oil," there must be firm proof as well as conviction behind the assertion.



The Composition of Oil Stocks

Scientists, delving ever deeper into the mysteries of petroleum, have succeeded in classifying the hydrocarbon families that comprise lubricating oil stocks. In addition, despite the submicroscopic size of individual hydrocarbon molecules, physicists have given us valuable knowledge of their construction.

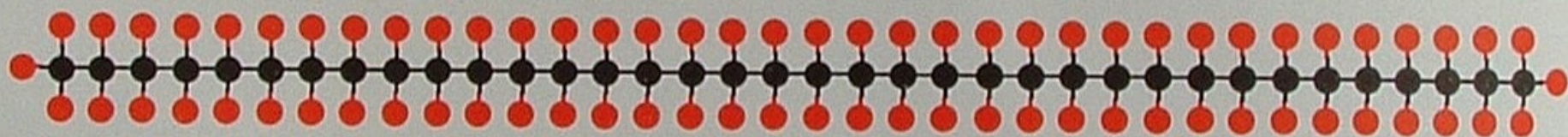
Petroleum substances are composed basically of carbon and hydrogen atoms, two of nearly 100 varieties of atoms that combine in millions of ways to form all physical substances. The reason that petroleum alone contains thousands of different compounds is that its carbon and hydrogen atoms have combined in an almost countless variety of hydrogen-carbon or hydrocarbon unions. One carbon atom chemically combined with four hydrogen atoms constitutes a molecule of methane, the lightest of petroleum gases. Increasingly large numbers of these two atoms combine to form increasingly heavier petroleum gases, liquids and solids until, toward the bottom of this scale, are some molecules each containing thousands of atoms. The pattern or arrangement

of such atoms into straight chains, rings or other combinations has led to our classifying the molecules into families.

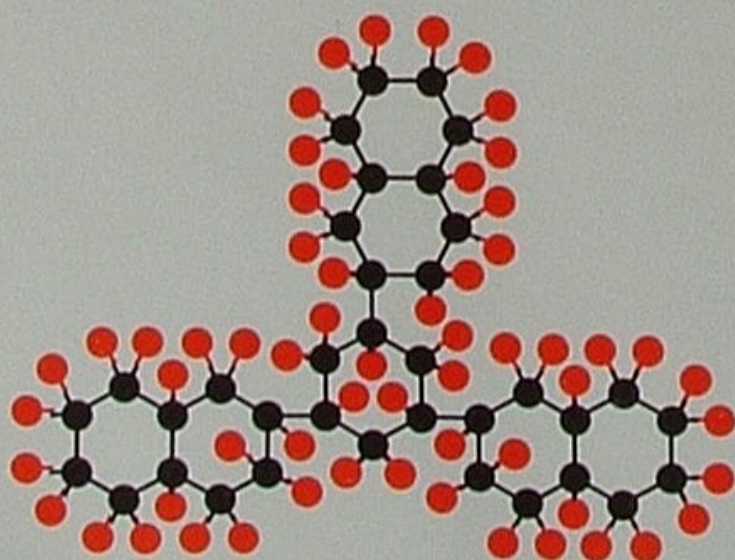
Within the relatively narrow range of petroleum cuts known as lubricating oil stocks are five predominating families, namely, the *paraffins*, *naphthenes*, *parathenes*, *resins* and *asphaltenes*. Three of these are represented in accompanying drawings, indicating the different manners in which their atoms may combine. Resins and asphaltenes are not represented because of their large size and completely unknown arrangements.

The *paraffins*, best known of the five families, are long, straight-chain arrangements of the two basic atoms. In molecules of small size, paraffins are the principal components of gases and other light petroleum products. But in sizes large enough to be classed as lubricating oil fractions, they tend to solidify into waxes at ordinary temperatures, hence must be removed almost entirely in refining processes. Nevertheless, paraffinic or waxy crude generally contains a large proportion of other molecules having lubrication values and high resistance to heat and oxidation.

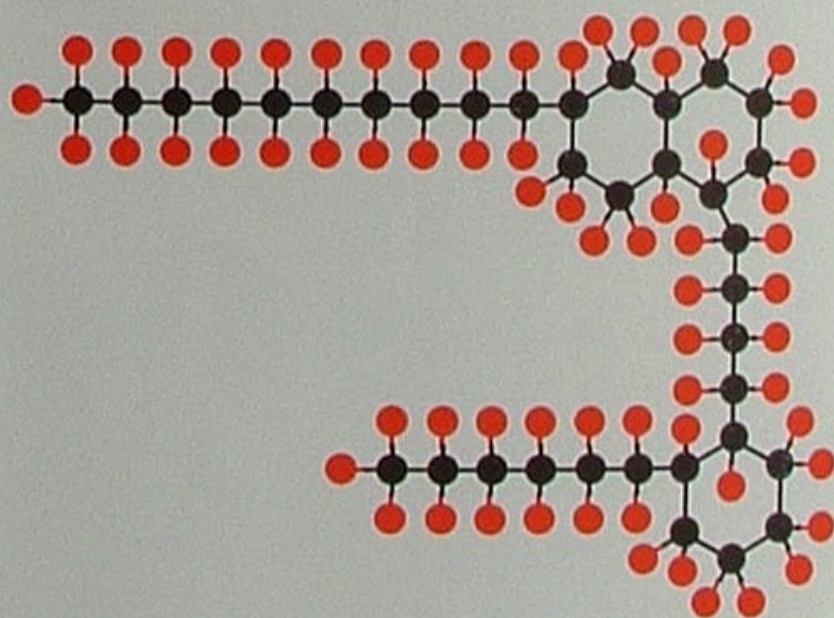
Carbon ● Hydrogen ●



A paraffin molecule



A naphthene molecule



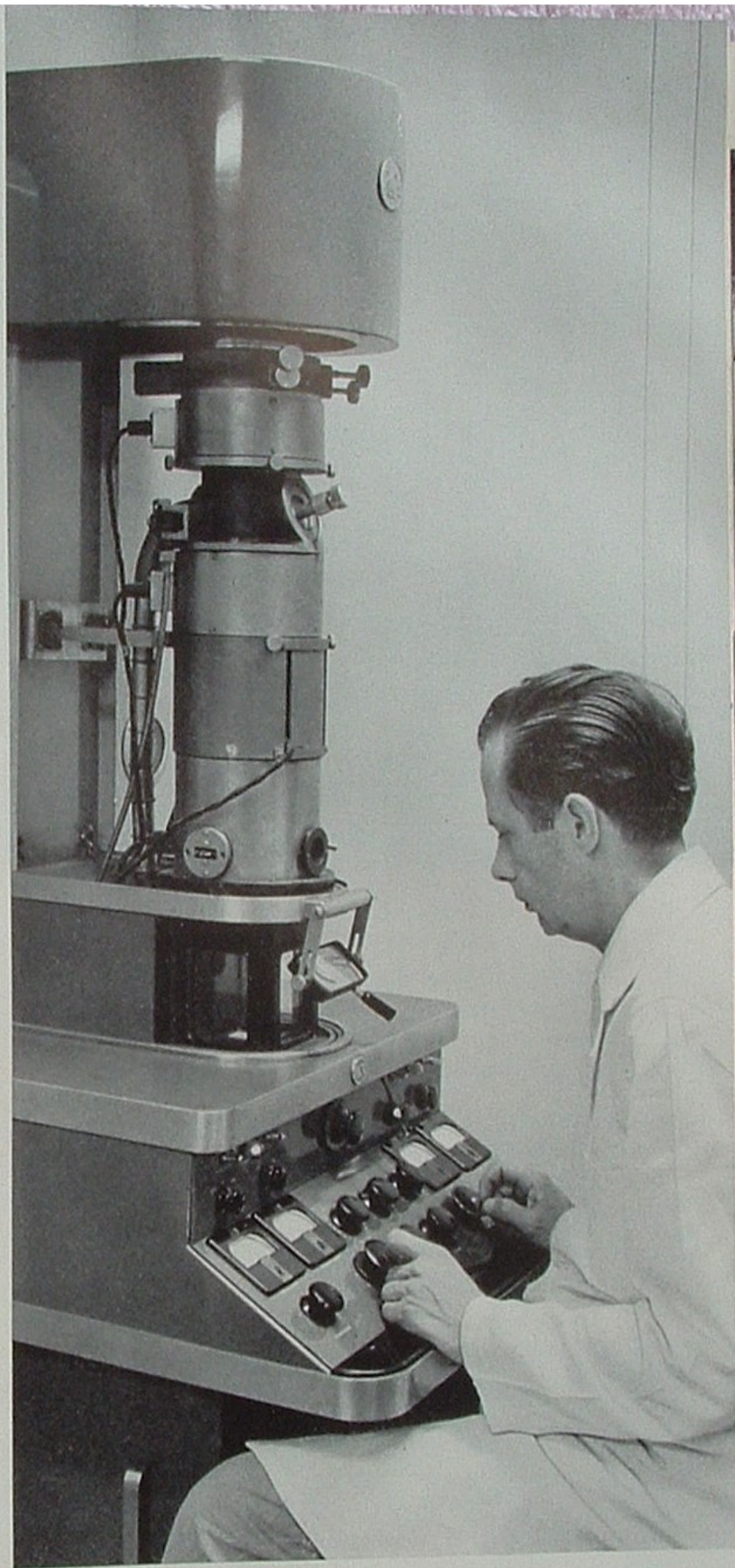
A parathene molecule

The *naphthenes* are ring compounds, meaning that a large proportion of their carbon atoms are joined together in a circular arrangement, as indicated in our drawing. But some of the naphthenes have short paraffinic side chains and are hardly distinguishable from the parathenes we next describe. The naphthenes have outstanding lubrication characteristics that make them ideal for hundreds of industrial uses. However, they constitute only a select minority in finished motor oils of highest quality.

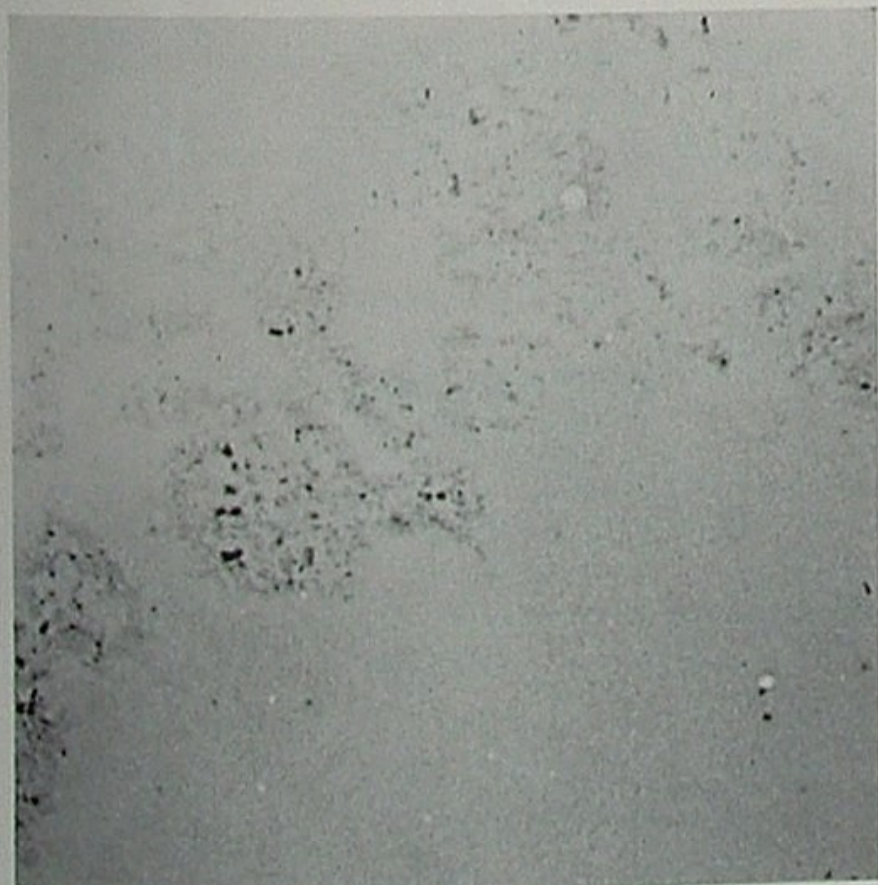
The *parathenes*, as their coined name suggests, are thought to be somewhat of a cross between or combination of paraffinic and naphthenic compounds. They consist of naphthene rings to which are attached long paraffinic side chains. These hybrid molecules appear to retain the better qualities of their pre-marital families. They have the higher heat and oxidation resistance of the paraffins, but better flow characteristics. They are the lubricating *cream* of all oil stocks. They are regarded as the most desirable hydrocarbon components of the finest motor lubricants.

The *resins* and *asphaltenes* are among the less welcome molecules found in stocks being refined for motor oil use. Their complicated ring structures carry a high proportion of carbon in relation to the hydrogen atoms present. They are heavy, dark in color, and better suited for other industrial purposes. Their complete removal somewhere in the refining process is one of the requisites of motor oil quality.

(To be continued.)



An invaluable tool to scientists in their endless search for knowledge pertaining to oil is the electron microscope, above. Left is a particle of compounded oil as it appears when enlarged to some 25,000 magnifications.





**Union Oil Company
Presents**

ADDITIONAL MEDICAL INSURANCE PLAN

**For Benefit of Employees
and Employees' Dependents**

FOR many years Union Oil people have avoided the heavy financial burden usually accompanying illnesses and off-duty accidents by cooperating in a medical program known as our Employees' Benefit Plan.

This system of spreading such medical costs among several thousand fellow-workers and over an entire Company career has proved to be one of the most satisfactory instruments of employee protection known to industry. Accordingly, Union Oil people generally have indicated a desire to supplement, rather than replace, that which has proved to be sound and beneficial.

Occasionally, criticism of our Employees' Benefit Plan is directed at its limited coverage. In a few instances—particularly during the present era of rising medical costs—EBP's maximum benefit of \$1,000 has failed to cover the full expense of extended illnesses. Secondly, EBP is limited solely to employees and in no way offers insurance protection to our dependents.

As a result, the Company's Medical and Industrial Relations departments have observed a steadily mounting need and employee eagerness for supplemental coverage.

Now a new group plan has been tailored to Union

Oil people's needs. It is the product of careful studies made by independent consultants as well as qualified Company representatives. It is one of the soundest and most comprehensive medical programs available. Supplementing our other insurances and benefits, it rounds out one of the most effective bulwarks ever conceived to safeguard a group of working people against adversity.

Actually, the proposed medical insurance embodies two parts: (1) an INSURED MEDICAL PLAN FOR EMPLOYEES, to cover medical costs beyond the \$1,000 EBP limitation, and (2) an INSURED MEDICAL PLAN FOR DEPENDENTS, designed for the benefit of employees' families during emergencies.

INSURED MEDICAL PLAN FOR EMPLOYEES

Our Employees' Benefit Plan pays medical expenses of its members up to \$1,000 for any one accident or illness. In order to provide the additional financial assistance required in so-called *catastrophe* cases, we may

*This announcement is directed to all employees except those covered by a collective bargaining agreement. Copies of the proposed plan have been sent to the representatives of such employees for their information and consideration.

now subscribe to the Insured Medical Plan for Employees.

The benefits provided by this supplemental coverage start the moment medical expenses for any one illness or accident exceed \$1,000, regardless of whether the first \$1,000 was paid by the Employees' Benefit Plan, by the employee personally, or a combination of the two, and continue up to an additional \$5,000.

However, in order to discourage abuse of the plan and thus keep it within the cost reach of all employees, a system of co-insurance is provided. That is, the insurance carrier will pay 80 per cent of medical expenses covered by the Supplemental Plan up to a maximum insurance allowance of \$5,000 for any one accident or illness. Being obligated to pay the remaining 20 per cent, the employee will have ample inducement to keep costs within reason.

INSURED MEDICAL PLAN FOR DEPENDENTS

The most important feature of the new insurance program is the provision of financial assistance when an employee's dependent has need of hospitalization and surgery.

A dependent is defined under the Insured Medical Plan for Dependents as (1) an employee's spouse, or (2) an unmarried child over 14 days and under 19 years of age. And here are the base benefits for which he or she is eligible under the applicable provisions:

DEPENDENTS' BASE BENEFITS

- Hospital board and room** —up to \$12 daily for 70 days
- Surgical fees** —payable according to a surgical schedule whose maximum fee is \$300.
- Hospital services** —up to \$240 for the cost of drugs, X-rays, anesthetics, tests and other miscellaneous services charged by the hospital while dependent is confined as a bed patient, or as a hospital outpatient for surgery or emergency accident treatment within 24 hours of an accident.
- Medical treatment in hospital** —up to \$5 daily for 70 days for doctor's calls during confinement.
- Polio expense** —coverages itemized above and the supplemental benefits do not apply to polio cases. Instead, a special benefit is provided which pays up to \$5,000 for polio treatment.

DEPENDENTS' SUPPLEMENTAL BENEFITS

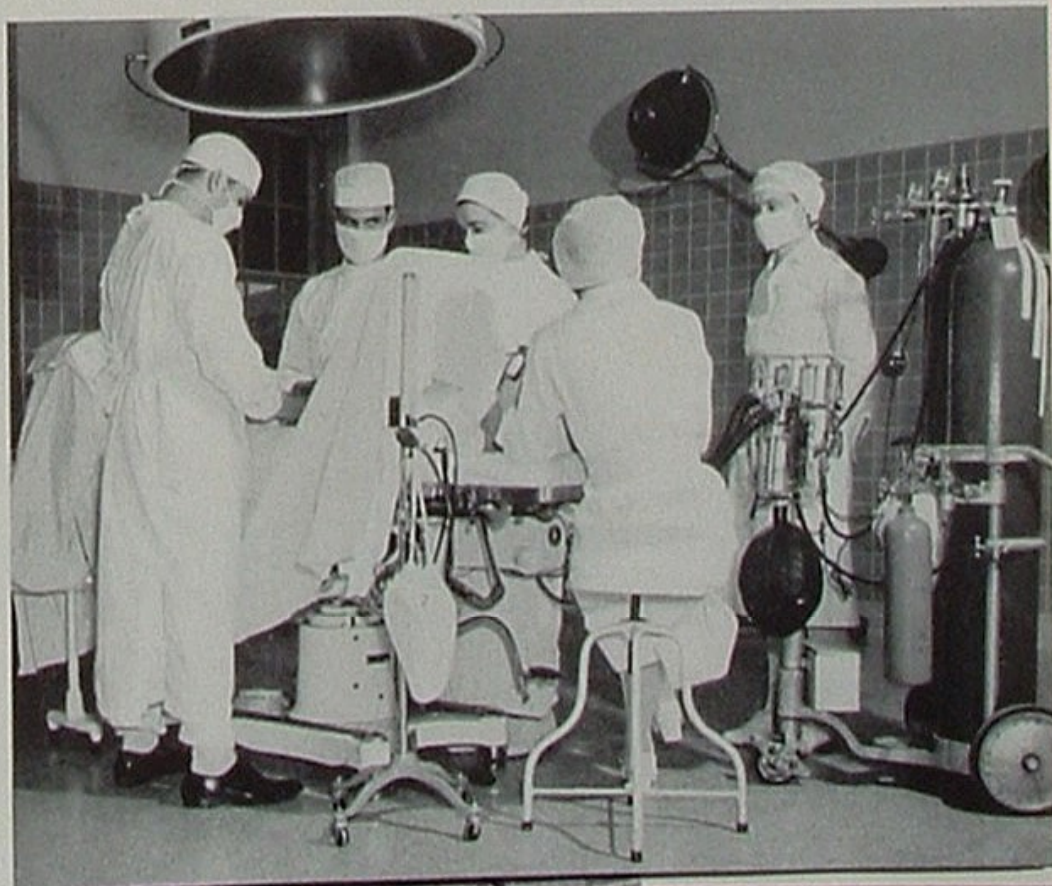
As is true of the Employees Benefit Plan, there will be some instances in which the base benefits under the Insured Medical Plan for Dependents will fall short of meeting all costs of an extended illness. For such catastrophe cases supplemental benefits are provided, which increase by \$5,000 the amount of financial assistance available for treatment during each individual illness or accident.

This too is a co-insurance arrangement, meaning that the insurance carrier pays 80 per cent of the costs, leaving 20 per cent to be paid by the insured employee. Also, in order to keep the cost of this coverage within reach, the employee will be obliged to pay a small deductible amount before the Dependents' Supplemental Benefits take over. The deductible amount is \$100 if the employee earns less than \$10,000 per year; otherwise it is \$150. Thus the supplemental benefits become effective during a dependent's illness as soon as the employee has been put to \$100 (or \$150) of additional medical expense.

EXCLUSIONS AND LIMITATIONS

There are certain types of disabilities necessarily excluded from low-cost group benefit plans, or which are adequately covered under other insurance provisions. Therefore, our new medical insurance plan excludes the following:

- Disabilities covered under Workmen's Compensation Laws.
- Treatment provided by the Veteran's Administration.
- Pregnancy.
- Cases of insanity.
- Cases of attempted suicide.
- Dental work.



- Eye examinations, glasses, hearing aids.
- Cosmetic surgery.
- Periodic health examinations.
- Rest home expenses.
- Nervous and mental disorders unless hospital confined.
- Disability caused by war or an act of war.
- Administration of vaccines, anti-toxins or injections for immunizing against disease or desensitizing against allergy, unless completely disabled by the condition.

COSTS

It is folly to imagine that any service or protection can be offered without cost. Socialized medicine sometimes purports to be free, but is actually paid for by recipients in the form of heavy taxation.

Accordingly, Union Oil has elected to be forthright in presenting both the program and its costs. The plans are not free. Neither are they expensive. But they do represent one of the best insurance *buys* available on the present market.

Here is the cost to you, in monthly premiums to be paid by payroll deduction, of the new plans we have

herein recommended. This cost is in addition to the monthly premium of \$3.50 now being deducted for our Employees' Benefit Plan:

COST PER MONTH

For employee with no dependents.....	\$.60
For employee with one dependent.....	5.76
For employee with two or more dependents.....	9.57

To further assist you in understanding the operation and measuring the value of the proposed insurance plans, we are presenting a cost itemization of four representative disabilities. All are actual Union Oil employee cases recently recorded in our Medical Department files. Our tabulation shows how the medical benefits would have applied in each instance.

Furthermore, within the next few weeks employees and the representatives of the various collective bargaining groups will be given an opportunity to discuss details of the program. Enrollment applications will be made available at that time.

The insurance company stipulates a 75 per cent enrollment of eligible employees in order to make the plan operative.

HOW THE MEDICAL PROGRAM WORKS

When applied to four representative Union Oil cases

EXAMPLE 1 (Employee requiring care beyond EBP coverage):

	Total Expenses	Employees' Benefit Plan Coverage	Additional Expenses
IN HOSPITAL			
Hospital room and board	\$1320	\$389	\$ 931
Hospital services	709	412	297
Physician's hospital calls	76	11	65
Surgery	535	135	400
Registered nurses	1434		1434
NOT IN HOSPITAL			
Physician's office and home calls	103	53	50
Registered nurses	108		108
TOTALS	\$4285	\$1000	\$3285

SEQUENCE OF PAYMENTS

Total expenses	\$4285	Supplemental Plan pays 80% of \$3285.....	\$2628
Employees' Benefit Plan pays.....	1000	Employee pays 20% of \$3285.....	657
Balance to be paid.....	3285	Total paid by Plan and employee.....	3285

SUMMARY

Total expenses	\$4285
Employee pays	657
Balance paid by Plans	3628
Comparative amount paid by Plans	85%

EXAMPLE 2 (Dependent requiring hospitalization and home care):

	Total Expenses	Dependents' Plan Coverage	Additional Expenses
IN HOSPITAL			
Hospital room and board	* \$940	**\$564	\$376
Hospital services	711	240	471
Physician's hospital calls	188	188	
NOT IN HOSPITAL			
Physician's office and home calls	254		254
Registered nurses	454		454
TOTALS	\$2547	\$992	\$1555

*47 days @ \$20 per day
 **47 days @ \$12 per day

SEQUENCE OF PAYMENTS

Total expenses	\$2547	Supplemental Plan pays 80% of \$1455	\$1164
Dependent's Plan pays	992	Employee pays 20% of \$1455	291
Employee pays deductible	100	Total paid by employee	391
Balance to be paid	1455	Total paid by Plans	2156

SUMMARY	
Total expenses	\$2547
Employee pays	391
Balance paid by Plans	2156
Comparative amount paid by Plans	85%

EXAMPLE 3 (Dependent requiring hospitalization and surgery):

	Total Expenses	Dependents' Plan Coverage	Additional Expenses
IN HOSPITAL			
Hospital room and board	* \$378	**\$252	\$126
Hospital services	419	240	179
Surgery	400	300	100
NOT IN HOSPITAL			
Physician's office and home calls	80		80
TOTALS	\$1277	\$792	\$485

*21 days @ \$18 per day
 **21 days @ \$12 per day

SEQUENCE OF PAYMENTS

Total expenses	\$1277	Supplemental Plan pays 80% to \$385	\$308
Dependent's Plan pays	792	Employee pays 20% of \$385	77
Employee pays deductible	100	Total paid by employee	177
Balance to be paid	385	Total paid by Plans	1100

SUMMARY	
Total expenses	\$1277
Employee pays	177
Balance paid by Plans	1100
Comparative amount paid by Plans	86%

EXAMPLE 4 (Dependent not requiring hospitalization):

	Total Expenses	Dependents' Plan Coverage	Additional Expenses
NOT IN HOSPITAL			
Physician's office and home calls	\$ 647		\$ 647
Drugs	273		273
X-rays	100		100
Laboratory Services	65		65
TOTALS	\$1085		\$1085

SEQUENCE OF PAYMENTS

Total expenses	\$1085	Supplemental Plan pays 80% of \$985	\$788
Dependent's Plan pays	0	Employee pays 20% of \$985	197
Employee pays deductible	100	Total paid by employee	297
Balance to be paid	985	Total paid by Plan	788

SUMMARY	
Total expenses	\$1085
Employee pays	297
Balance paid by Plan	788
Comparative amount paid by Plan	73%



INDUSTRIAL SUMMARY

TRANSPORTATION & DISTRIBUTION Construction has been started on an additional 150,000-barrel storage tank at Ventura Marine Terminal to handle increased production from the Torrey and Oakridge fields. Latest production estimates indicate that more than 24,000 barrels per day will be moving into the terminal before the end of 1953. An additional power pump has been installed at Santa Paula Station in order to keep up with this increased crude oil volume.

Two pressure tank cars, originally designed to carry liquefied petroleum gas, have been converted to anhydrous ammonia service and are now operating between San Francisco Bay and Los Angeles Refinery. Additional cars will be converted to dual liquefied petroleum gas-anhydrous ammonia service as required.

from E. L. Hiatt

RESEARCH Success of the recent 123rd National Meeting of the American Chemical Society in Los Angeles was attributed in large degree to the personnel and facilities of Union Oil Company's Research Center. Heading the list of Union Oil people who took prominent part was Dr. Thomas F. Doumani, 1953 chairman of the Southern California Section, which played host to the 5,000 ACS members assembling in Los Angeles from all parts of the world. Our Dr. Clyde Berg and Dr. W. Smith Dorsey presented technical papers. Our George R. Lake was social chairman for the Petroleum Division and was assisted by Dr. Alexander Grenall, O. D. Cunningham, James K. Fogo, Margaret Ketteringham and William Ketteringham. Dr. W. E. Bradley is area representative of the Southern California Section. And a number of other Research Center chemists and chemical engi-



Dr. Thomas F. Doumani

neers attended and assisted at the various technical sessions. A highlight of numerous educational events offered to members was a field trip to our Research Center at Brea. Over 200 members made this tour, which was planned and conducted by Dr. Loren L. Neff.

from C. E. Swift

MARKETING A series of clinics is being conducted throughout our western marketing area to acquaint Union Oil dealers with up-to-date procedures for servicing automatic transmissions. Coincident with the clinics, we are making available to dealers a new type pump and meter adapted specifically to this service. The pump, with its ceramic filter, screws tightly into the two-inch opening of an oil container, providing convenience as well as a safeguard against product contamination. The clinic covers all types of automatic transmissions and demonstrates actual servicing of the three principal types. Therefore, Union Oil dealers will be skilled and equipped to offer the finest of such service to our customers.

Good news to our customers and dealers in the Territory of Hawaii is the announcement that Union Oil credit cards are being issued in the islands for the first time, under the same conditions prevailing on the mainland. Tourists who take their cars aboard ship on trans-Pacific voyages will now be pleased to find their Union credit cards as good as gold, at home or abroad.

Meetings were held during March with our eastern distributors of Union Oil products. In attendance at Dallas, Atlanta, New York, Boston, Cincinnati and Chicago conferences were 120 representatives of our 60 eastern distributors and 38 Union Oil people assigned to our eastern market. Topics of discussion were our 1953 advertising and cooperative advertising campaigns, sales promotion materials available to distributors, and our new Royal Triton 5-20 Motor Oil. Members of the Company's Refinery Sales and Sales Promotion departments and of our advertising agency participated.

Storage facilities at Union's San Diego Terminal have been rearranged to permit an increase in the plant's storage capacity for refined oils. Full cargo shipments may now be handled by this terminal, and a better year around balance of refined and black oils will be achieved. San Diego Terminal supplies not only the San Diego District but also our distributors below the Mexican border in Baja California. Modern fire protection facilities were also provided along with storage changes.

A vast land reclaiming project, begun several years ago in the Roll Valley 45 miles east of Yuma, Arizona, and scheduled for completion in 1955, will add 75,000 acres of formerly non-productive terrain to America's fertile farm land. Engaged in the land leveling and the construction of waterways across the desert are some of the country's leading contractors. The big three of this group—Peter Kiewitt Sons, Morrison-Knudsen and Marshall, Hass and Royce—have selected Union Oil products to power and lubricate their equipment, ranging from the smallest pick-up truck to the largest of tractors and earth-moving units. Desert dust and extremes of heat encountered in this area subject engines and lubricants to some of their severest trials.

from Roy Linden

● MANUFACTURING A discussion of the Company's refinery objectives was the purpose of a technical review held at Brea Research Center on March 18 by the Manufacturing Department. The program included an analysis of the future supply and demand predicted for petroleum products, new technological developments in petroleum refining, a proposed refinery expansion program for Oleum Refinery, and new product developments. The speakers were members of our Research, Process, Economics and Manufacturing departments.

The initial production of ammonium sulfate at Los Angeles Refinery was achieved on March 18, 1953. Our new plant, with a production capacity of 52 tons per day, handles as feed stock two refinery by-products—sulfuric sludge acid and ammonia compounds. Sulfuric sludge acid is obtained from the acid treatment of gasolines, solvents and kerosene. Ammonia compounds are produced at the catalytic cracking units. Some purchased ammonia is also required in the process. Ammonium sulfate is an essential ingredient of commercial fertilizers.

Removal of the old Southern Pacific Railroad depot at Oleum Refinery marks the passing of a landmark that has stood for nearly four decades.

The steam boiler plant is being dismantled at Oleum,

as all steam requirements of this refinery are being supplied by the adjacent Pacific Gas & Electric plant.

from K. E. Kingman

● FIELD The Permian Basin of West Texas and New Mexico, with its contiguous minor basins, has long been recognized as one of the better areas in the United States to prospect for and develop oil production.

Union Oil's active entrance into this area with an exploration and production group dates from 1941. Since that time curtailed allowable production has been built up to in excess of 6,000 barrels daily.

From 22 producing fields of the Permian Basin area Union Oil and our Los Nietos subsidiary are realizing oil production. Fields on the extreme margins of our producing area are over 300 miles apart. To handle all phases of the work, including exploration, production and accounting, requires the services of 104 employees, headed by E. R. Atwill, division manager. Headquarters are at Midland, Texas.

The Land Department portfolio indicates 650,000 leased acres on 292 prospects in 70 counties. Already in 1953, exploratory efforts have been rewarded by the addition of three new productive areas among these widespread holdings.

from Sam Grinsfelder

● PURCHASING Among the less apparent functions of our Purchasing Department is an advisory service relating to practically all types of purchased items.

The department conducts a constant search for new and improved materials. The resultant flow of catalogs and other types of product literature and correspondence therefore has led to the establishment and maintenance of current catalog files. From these, Purchasing obtains data for special reports and can promptly supply up-to-date information on purchased items.

Moreover, among our buyers are specialists in such fields of purchasing activity as chemicals, service station items, paint, containers, pipe, furniture, and many other types of merchandise. These buyers go far beyond a study of catalogs, specifications and price lists. They make visits to establishments where the goods are manufactured and also check with various users of the goods in question.

The department is more than anxious to be of service Company-wide in making available the assistance both of highly qualified buyers and of the purchasing data kept on file.

Where the volume of purchases warrants, special committees with representatives from all interested departments have been set up, and two such committees are at present active in our purchases of paints and furniture. As a result of this pooling of knowledge and experience, Company operations have had the benefit of standardized materials and methods.

from E. H. Weaver



Union Oilers at Los Angeles Refinery not only look at such Safety posters as this one, but memorize the words and take 'em home to their families. Can you guess why?

It Pays to Keep Posted At LAR

from Paul Doyle

ANY tendency to let Safety advice go in one eye and out the other has been dealt a knockout punch at Los Angeles Refinery.

Each month new Safety slogans are posted on roadside type billboards installed at various points throughout the refinery. A short time after each new posting, the name of some refinery employee is drawn by chance from several hundred names placed in a bowl. An attempt is then made to contact the "lucky" employee at home during his off-duty hours. If he or any member of his family can describe the approximate theme of the current Safety poster, there will presently appear at his door a messenger bearing a very worthwhile prize. But if the "lucky" guy is not *hep*, someone *real Jorge* gets the *buzz* and the *bacon*.

Stars and cast of the first award are introduced here-with.

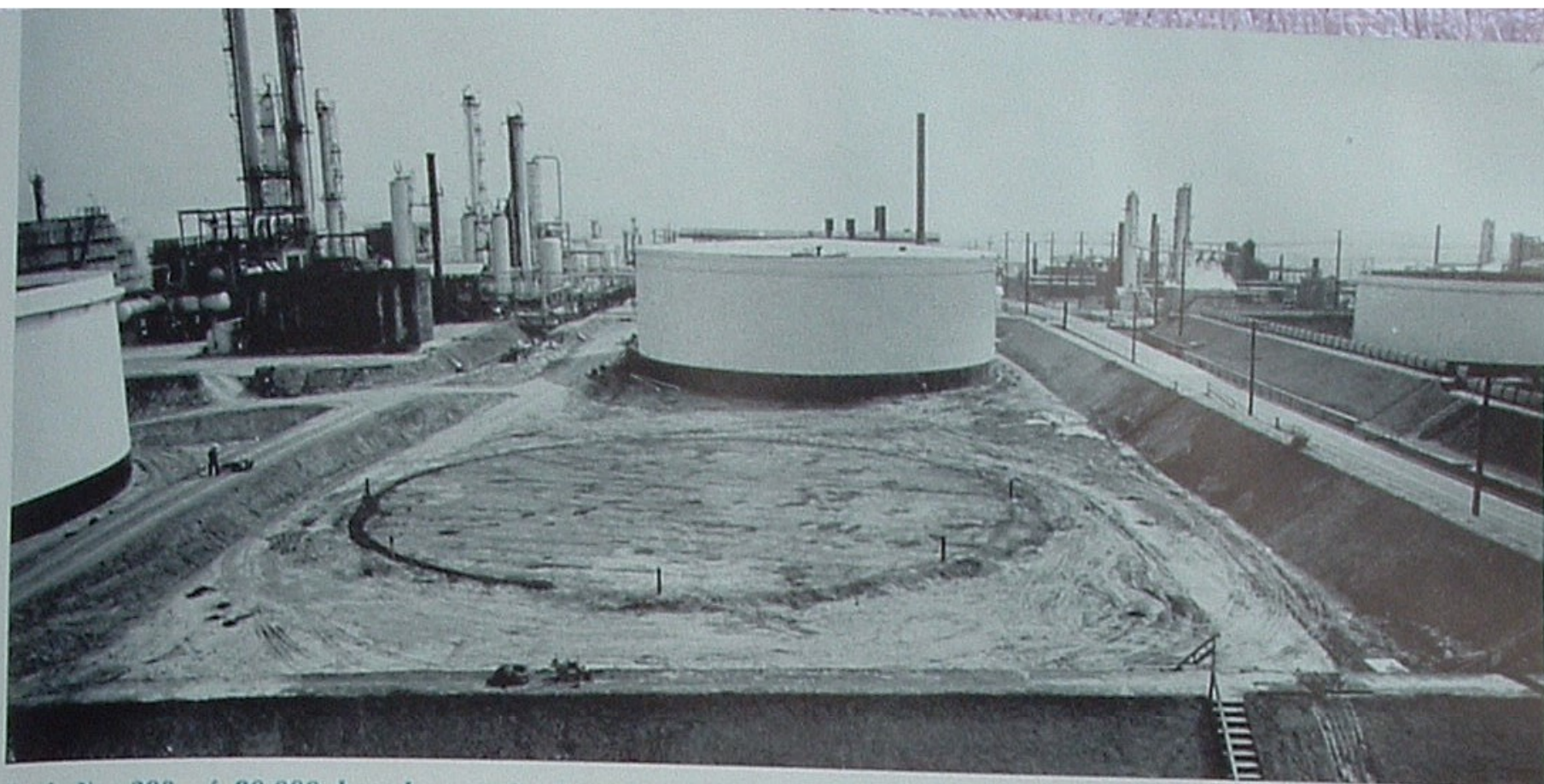


Above left, Secretary Dorothy Smith, Manager Elmer Palmer and George Orr of Fire & Safety draw name of some "lucky" refinery employee from a lot of several hundred.

Above, subsequently a telephone call from Blanche Hackett, William Shumate and Cleo Goyette of Fire & Safety challenges the "lucky" one to quote the current safety slogan.



At left, William Dutro of Maintenance, first hero of the Safety quiz, debates with sons Billy and Bobby and wife Dorothy as to whether ham or turkey is the better prize.



Tank No. 293 of 80,000 barrels capacity is seen at the site of its original construction amid facilities of Los

Angeles Refinery. The problem was to move it at minimum cost to the circular sand pad seen in foreground.

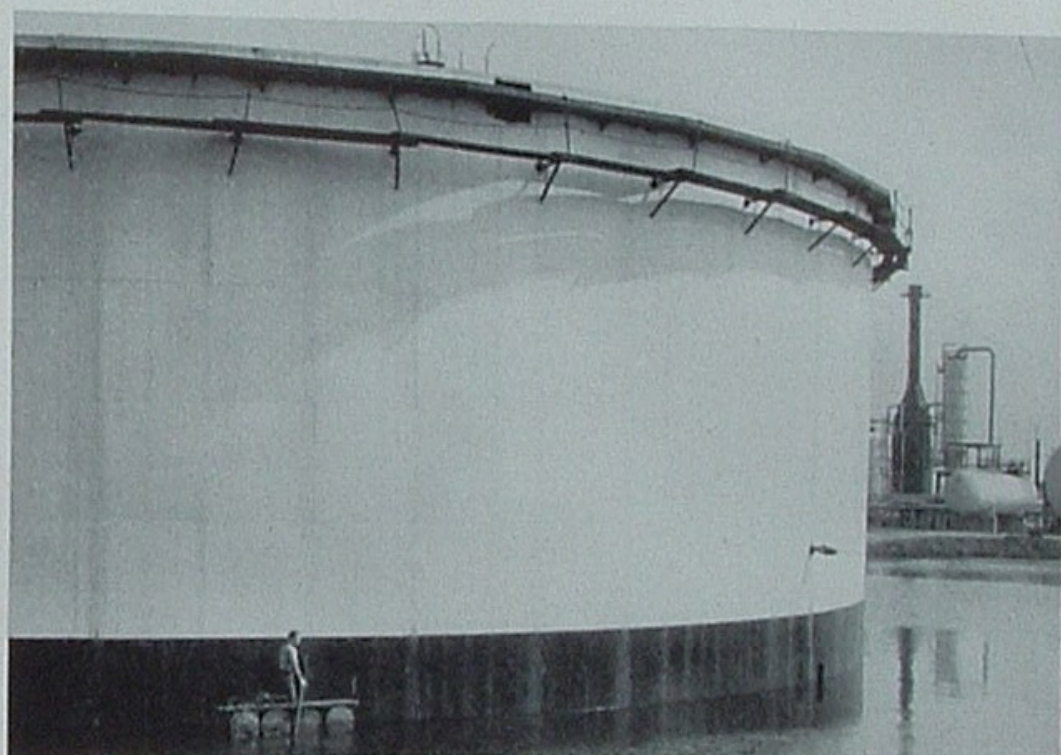
80,000 Barrel TANK MOVED 200 Feet IN 45 MINUTES

from John Ramirez

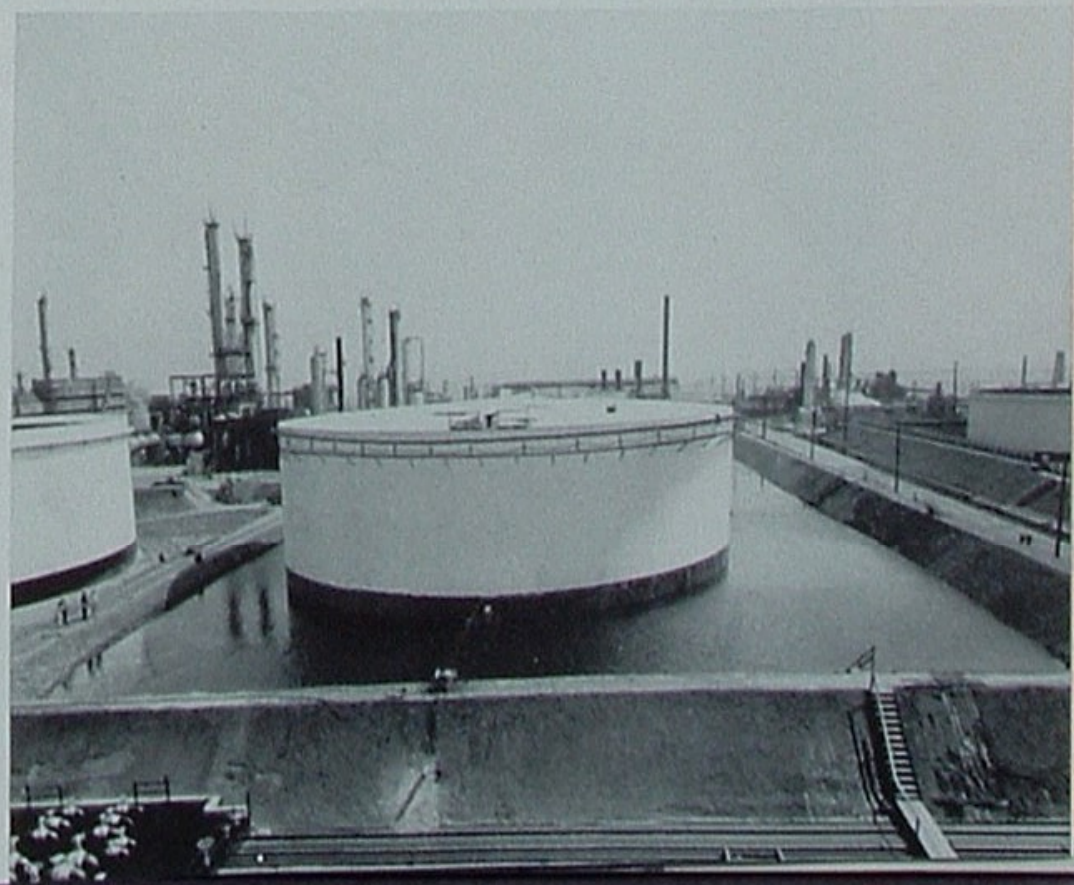
TO provide additional space for LPG storage at Los Angeles Refinery, it was necessary recently to move an 80,000 barrel tank some 200 feet from its former location. Such operations normally call for complete dismantling of the tank prior to moving, and re-erecting its sections at the new location—at an estimated cost in this instance of \$60,000.

Union Oil engineers, however, decided to try a moving technique quite new at least to the West Coast oil industry. They prepared a circular base or sand pad at the designated new location; loosened the tank bottom as much as possible from its old anchorage; supplied its roof and walls with interior bracing; and then pumped water into the dyked area. Within 36 hours the water measured 19 inches in depth and the tank was adequately afloat with some six inches of water beneath it. Moving the enormous vessel 200 feet to its present location was accomplished with four pneumatic winches in 45 minutes—and at a total cost of only \$5,000.

Since the walls of such storage tanks are proportionately only one-sixth as strong as the sides of an ordinary coffee can, it is obvious that many precautions had to be taken to prevent buckling or collapse enroute.



Instead of dismantling the tank, engineers decided to float it to the new location. Nineteen inches of water and four winches did the trick in 45 minutes of actual transportation time—and at a saving of \$55,000.





"Slim" Webb needs an assist from Principal C. S. Barbo and Teacher Vivian Arnold on moving ahead to the 6th grade.



"Muscles" Havland and contemporaries sit in on a student council meeting at Washington Junior High School, Seattle.

"Blacky" Cole is introduced to Jim McCloud, son of Union Oiler Earl McCloud, by Principal Claude Turner, center.



They Skipped a Grade **BACKWARD**

from Gudrun Larsen

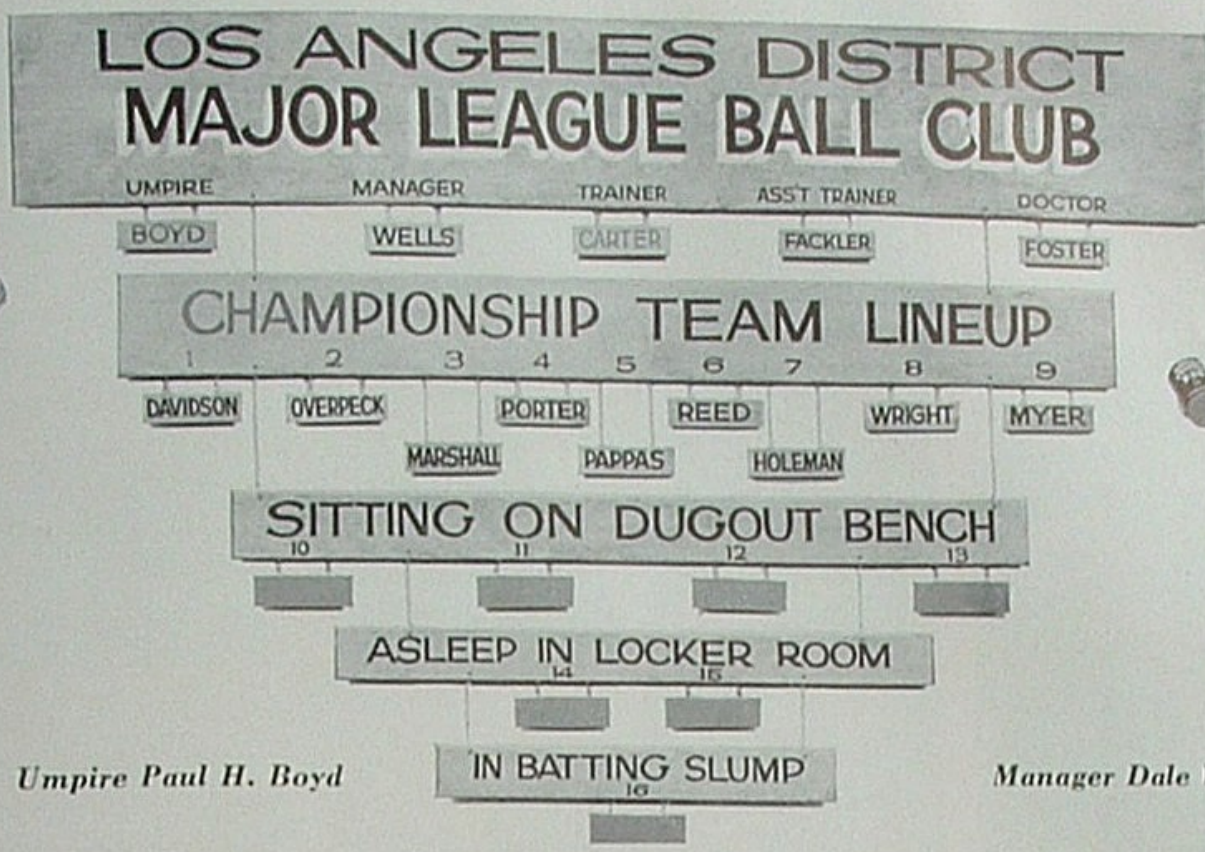
EITHER in gratitude or retaliation, 2,500 school teachers who were guests of 143 Seattle business firms during Business-Education Day last summer invited their hosts of that occasion back to a recent Education-Business Day in the public schools.

Representing Union Oil Company on the latter occasion were Personnel Supervisor H. R. Webb, Distribution Manager W. I. Havland and Resident Manager Carl Cole of Seattle. Allegedly by chance rather than intellectual inaptitude, Cole and Havland went back to junior high school, while Webb spent a hectic day trying to win promotion from kindergarten to the seventh grade.

All returned to the Company office with kindest words and greatest enthusiasm for the manner in which future American petroleum marketers and other leading intellectuals of slightly lesser importance are being trained. Said the spokesman of the three, "In today's schools the stairs are a little steeper, the desks a lot smaller and the teachers prettier. And I ain't never seen such a smart bunch of kids! Say, how dya spell Massachusetts?"

And "What's cookin', Ma?" seems to be the tenor of their greeting as the three scholars troop homeward to supper.





Umpire Paul H. Boyd

Manager Dale Wells



Boyd's "ANGELS" are Hitting the Ball

THEORETICALLY, a Union Oil salesman is in there *pitching* for business—five days a week—from daylight 'til dark. "Then how come," you ask, "can they go to bat in an occasional drive and score a few extra barrels of oil on nearly every sales pitch?"

One of the answers is competition—of the type currently being engineered in our Southwest Territory league. Skipper Paul Boyd of the Sixth and Mateo Street "Angels," Los Angeles, has transformed his squad of 21 men into a major league ball club—complete with championship team, bench warmers, locker room inmates, and at least one candidate for the Texas League.

All a player has to do to make the team is to exceed his last year's sales "batting average" by a higher per-

centage than 12 other men. The nine men with the highest averages naturally attain first-team recognition, while those in the dugout plot ways and means of getting into the lineup next month.

Just to keep everything aboveboard, if not conspicuous, a player lineup for today's game is maintained about in center field of the Los Angeles office. And a picture of the lineup is sent monthly to each salesman's home—to stimulate domestic morale.

Result: During the first three months of 1953, the Los Angeles District sold 1,200,000 units of lubricating oil and grease, a half-million unit increase over 1952, and the highest rate of sale ever attained in a Union Oil district. Even the Texas Leaguer played great ball.

The Sixth and Mateo Street "Angels," a group of major leaguers who established sales record in first quarter of '53.



Union Oilers



▲ LION-IZED Fred Olsness, shown at left with Manager Bud Tilbury of P & A Shippers, is our resident manager at Spokane, Washington, and during extra hours serves as tail-twisting Lion Tamer for the Spokane Lions Club. In the latter capacity he recently had the honor of appearing in one of the first television programs to be seen in that city. His modest two-star epaulets slayed 'em.

from Gudrun Larsen



▲ ELECTED TO EBP BOARD Polling over 1,600 votes each, J. W. Towler and R. D. Roberts were elected during the recent balloting to membership on the Board of Administrators, Employees' Benefit Plan. They replace M. S. Thomson and R. H. Rockwell, whose terms of office have expired.



Bob Roberts, right, who is Territory credit manager in Los Angeles, has handled Company Credit Department responsibilities since his employment date in 1917.

John Towler, left, chief refinery engineer at Los Angeles Refinery, has worked also at Oleum Refinery since first joining the Company in 1933.

▼ QUICK, THE STORK! On a quiet Sunday evening in Seattle, Patricia Cochrane of Northwest Territory Accounting and her husband received their first inkling of good news from the stork. He'd alight on their roof with a bundle the following Thursday or Friday.

Hardly anyone could believe it when Pat broke the news Monday

morning. But prospective mothers never joke about such events. So, on went the office showers, below, away went Pat to look for safety pins, and right on schedule came a lovely new daughter—by adoption of course.

Grandmother Vi Rahkonen, also a Union Oiler, appears lower left with the swaddled cause of it all.

from Gudrun Larsen





HISTORY REPEATS The two pictures, left, were taken 27 years apart near the intersection of Hewitt Avenue and Wetmore in Everett, Washington. The Portland Cement Company took both pictures to document the history of paving. But notice whose truck happened along to steal the scene on both occasions. A Union Oil credit card customer spotted the coincidence in Engineering News Record.

from Portland Cement Association, Chicago, Ill.



LIGHT ENDS

Using Central Territory office waste baskets as their source of crude, members of the Girls' Club in San Francisco entered the Easter parade with this high-octane array of tops. From left, Christinia Potts, Sylvia Oetter, Laurette Luce, Donna

Toussaint, Pat Lenz, Marcella Lewis and Nancy Laumond model the light ends from which Messrs. Cadwell, Barr and Biehn picked the finest—Nancy's. Its IBM card base was leaded with Form 181 blossoms.

from Ethel Cline



OLEUMITES OF THE MONTH

are John Wierzbicky, left, and Howard Sweet who have come through 55 combined years of Union Oil service with hardly a ruffled hair—or better, with hair hardly ruffled.

John, a 25-year man, is the assistant planning supervisor in Oleum's Compound-Shipping Department.

Howard, with a 30th service anniversary to his credit, is also a member of the Compound-Shipping group.

from John Pollen



◀ SUPER SALESMEN ▶

May we introduce a bit tardily the winners of Northwest Territory's "Gridiron Classic" sales contest?

At left are Mr. and Mrs. Hollis Owens of Fall River Mills, California, embarking as guests of Union Oil Company on a trip to the Pasadena Tournament of Roses and Rose Bowl football game. Consignee Owens won the thrilling holiday by selling more lubricants during 1952 than any of his contest rivals.

At right, District Sales Manager Carl Leithoff is seen receiving from T. G. Wise, right, a bronze plaque for super leadership during same contest.

from Gudrun Larsen



◀ CERAMIST

Ione Mac William of Northwest Territory Accounting in Seattle has come a long way with her ceramics hobby, in which she first became interested about two years ago.

Her art calls for a combination of many skills—designer, sculptor and painter. As an example, the figurine she is seen holding was started from a rough mold. She equipped it with arms, hands, fingers and lace finery of her own design. Then with delicate brushes, some of which contain only one or two bristles, she added the minute detail of color.

Although Ione's work has attracted a number of eager purchasers, she prefers to remain an amateur. Most of her figurines are given to friends.

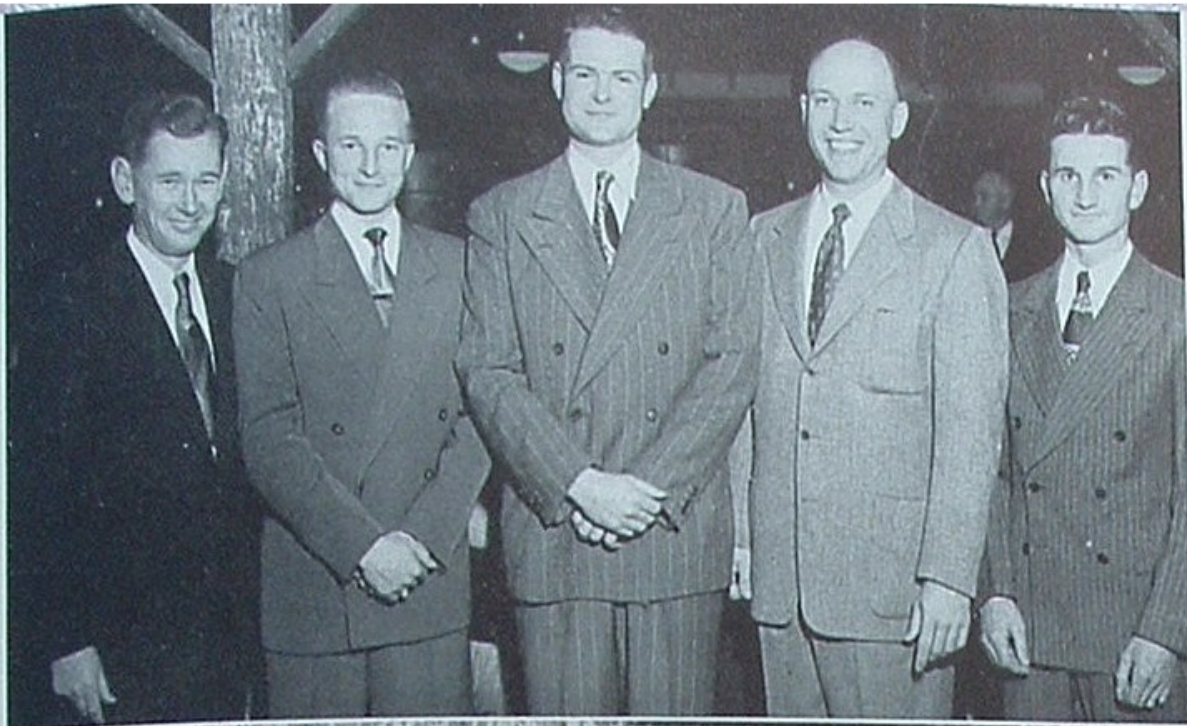
from Gudrun Larsen



◀ WORDLESS ELOQUENCE

Lincoln's birthday was chosen by Union Oilers in the San Francisco area as an appropriate time to welcome a unit of the Red Cross Blood Mobile Bank. Our coffee shop on the deck above Central Territory offices took on the atmosphere of a hospital. To it came many employees from Potrero Plant and the Credit Card Accounting office on Market Street, in addition to personnel of the Territory group. Lincoln's "It is altogether fitting and proper that we should do this," seems to best describe such wordless eloquence.

from Ethel Cline



◀ **OLEUM OFFICERS** From left are Secretary-Treasurer Clyde Morton, Vice President Tom Shepherd and President Dave Davidson, newly installed officers of the Oleum Refinery Supervisors Association; also Jack Mortenson, outgoing president, and John Pesheck, out-going secretary-treasurer.

"Fagg-ettes" who serenaded the annual party and installation of officers included, from left, Clarence Pedersen, Wally Gillmore, Jack Fagg, Herb Zirnite (by special permission of LAR), John Delessi, Keith Wall, John Bercovitz and Walt Kreutzen.

from John Pollen



▶ **BEST DRESSED** from a Safety standpoint this spring are, from left, Peggy Flores, Dorothy Leighton, Norma Gavette, Winnie Ferrario and Mary

Strader, model Oleumites. Such clothes may not make the man, but they certainly do a lot to preserve him.

from John Pollen



▶ **METHOD IN THEIR MADNESS**

Somewhat like the little boy who wanted to buy his mother a football for Xmas, Bakersfield roughnecks honored Receptionist Lorraine Cosner with this perishable service emblem on her 10th service anniversary—then demonstrated the only known way of keeping such a cake from going stale.

from Howard Fraser





◀ **CHAMPIONS** of the Research Center bowling league, at the recent conclusion of a 27-week schedule, were the "Termites," from left, Captain Robert Abercrombie, Kenneth Fort, Roger Kinsella, Nancy Groff, John Bills, Grant Hendricks, Ray Mattson and Art McKinnis. Each received an individual trophy and had his name inscribed on the league's perpetual trophy.

from Pat Milloy

IN MEMORIAM

With deep regret and with earnest sympathy toward their families and intimate associates, we report the death of the following employees:

On February 6, 1953
GEORGE R. LITTLE
 Comptroller's
 Retired June 1, 1940

On February 20, 1953
EARL S. WARD
 Central Territory
 Retired June 30, 1948

On March 4, 1953
WILLIAM J. GLOVER
 Los Angeles Refinery
 Retired August 30, 1946

On March 7, 1953
ERNEST P. HADEWIG
 Pipe Line Department
 Retired March 31, 1950

On March 18, 1953
ELDON M. MANN
 Coast Production

On March 23, 1953
FRED M. SMITH
 Southern Production

On March 23, 1953
ADELBERT L. SULLIVAN
 Southern Division Automotive
 Retired September 30, 1951

On March 26, 1953
N. G. MORTIZIA
 Oleum Refinery
 Retired July 1, 1939

On March 26, 1953
HERMAN LEROY LEICY
 Purchasing Warehouse
 Retired December 11, 1952

On April 14, 1953
FRANCIS J. MALONEY
 Treasurer's Department

On April 14, 1953
LOREN G. STURM
 Purchasing Department
 Retired April 7, 1953



◀ **OUT OF COMPETITION** The retirement March 1 of Home Office Purchasing's Bill Stockert, left, leaves one of the biggest vacancies in Union Oil bowling ranks. For many years, Bill has rated as a top member of numerous top teams engaged in Company competition. His office trophies were part of a much larger prize collection.

▶ **EASTER BLOSSOMS** being admired by Pat Lippy of Los Angeles Refinery were created by Head Guard Bill Forbes, right. Petals consist of broken egg shells, while perched inside each is the likeness of a baby chick. The unique piece attracted many compliments from refinery people during Easter.

from Jim McDonald





SERVICE BIRTHDAY AWARDS

APRIL 1953

MARKETING

Roseman, Arthur G., Los Angeles.....	40
King, George W., Rosecrans.....	30
Elvie J. Nesbitt, San Diego.....	30
Panosch, John F., San Diego.....	30
Rizor, George A., Portland.....	30
Witt, John U., Home Office.....	30
Bartel, Sidney, Los Angeles.....	25
Reh, Philip E., Los Angeles.....	25
Kelly, Hazel, Los Angeles.....	20
Nichols, Roy C., San Francisco.....	20
Korte, John G., Edmonds.....	15
Ulmer, Barbara, Los Angeles.....	15
Veatch, Merville W., Portland.....	15
Hanna, Nathaniel, Central America.....	10
LePage, Wilfred J., San Diego.....	10
Monroe, William J., San Francisco.....	10
Smith, Howard William, Edmonds.....	10

MANUFACTURING

Prior, Harold S., Oleum.....	35
Jackson, John W., Wilmington.....	30
Tilton, George I., Wilmington.....	30
Wadge, Ralph M., Oleum.....	30
Cooper, Bernard F., Wilmington.....	25
Costa, Caesar, Oleum.....	25
Haw, Wayne G., Wilmington.....	25
Towler, John W., Wilmington.....	20
Costa, Manuel, Oleum.....	10
DaCruz, Ernest P., Oleum.....	10
Fletcher, John B., Oleum.....	10
Holecek, Elmer C., Oleum.....	10
Marbury, Luther W., Oleum.....	10
Maris, Alfred L., Wilmington.....	10
Michaud, Martin L., Home Office.....	10
Reckling, Alexander, Wilmington.....	10
Rowlett, Roy L., Oleum.....	10
Taylor, Marie L., Oleum.....	10
Trainor, Genevieve J., Wilmington.....	10

EXPLORATION & PRODUCTION

Ferry, Hubert C., Home Office.....	35
Allaire, Charles H., Whittier.....	30
Brown, Kenneth W., Richfield.....	30
Buckner, Nolan W., Bakersfield.....	30
Dievendorff, Horton H., Whittier.....	30
Fisher, Edward C., Bakersfield.....	30
Kehoe, John J., Whittier.....	30
Rohning, Walter C., Domingues.....	30
Condon, Don C., Domingues.....	25
Crawford, Arthur N., Richfield.....	25
Albertson, Kenneth D., Orcutt.....	10
Crummy, Walter C., Cut Bank.....	10
Holst, Holton L., Home Office.....	10
Johnston, Orain B., Domingues.....	10

COMPTROLLERS

Powning, James G., Home Office.....	35
Buell, Ina, Home Office.....	15
Keenan, George P., Home Office.....	15
Johnson, Arthur M., Home Office.....	10
Messenheimer, Harry H., Home Office.....	10
Walde, Bernice A., Home Office.....	10

NATURAL GAS & GASOLINE

Barrett, Patrick, Home Office.....	30
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MARINE

Ekstrom, Olaf W., Wilmington.....	25
Bodden, William A., Wilmington.....	15

AUTOMOTIVE

Hill, Herbert W., Santa Fe Springs.....	25
Sharp, Harvey B., Santa Fe Springs.....	10

PIPELINE

Stalnaker, Harvard F., San Luis Obispo.....	25
Abbott, Laura N., San Luis Obispo.....	10

RESEARCH & PROCESS

Herron, Clinton V., Brea.....	15
Smiley, Reisin W., Brea.....	15

Retirements



A grateful Company and host of well-wishing employees are bidding farewell to the following Union Oilers who have concluded long careers of Company service and are retiring:

STEPHEN KEITHLEY

Pipe Line Department
Employed 9/29/20—Retired 4/1/53

THOMAS W. ISAACS

Field Department
Employed 1/15/22—Retired 4/1/53

ROBERT L. GILLIAM

Pipe Line Department
Employed 11/26/26—Retired 4/1/53

MILDRED I. FELTS

Northwest Territory
Employed 3/13/28—Retired 4/1/53

ELMER C. HOLECEK

Oleum Refinery
Employed 4/5/43—Retired 4/1/53

LUCIUS L. FARNUM

Oleum Refinery
Employed 9/28/13—Retired 5/1/53

JAMES G. POWNING

Comptroller's
Employed 4/1/18—Retired 5/1/53

RONALD D. GIBBS

Executive
Employed 1/6/19—Retired 5/1/53

CARL J. PEPPER

Coast Field Department
Employed 12/16/22—Retired 5/1/53

JOHN M. HARRIS

Los Angeles Refinery
Employed 9/20/26—Retired 5/1/53

GEORGE E. M. SOPER

Northern Division Garage
Employed 6/13/27—Retired 5/1/53



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APRIL - MAY 1953

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ON TOUR is published monthly by Union Oil Company of California for the purpose of keeping Union Oil people informed regarding their Company's plans and operations. Reader participation is invited. Address communications to ON TOUR, 617 West 7th Street, Los Angeles 17, California.

T. D. Collett, Editor..... R. C. Hagen, Asst. Editor

One hour's work



1 9 3 8

buys 80% more "76" gasoline today than it did 15 years ago!

Excluding gasoline taxes.

1 9 5 3



Today's Union Oil "76" gasoline is superior to the 1938 variety, too.

Our free, competitive American system has stimulated great advances in petroleum research by offering an incentive for the introduction of new and better products.

So when your friends complain about the high cost of living, remind them that one hour's work today buys 80% more "76" gasoline—and better quality gasoline—at a Union Oil station than it did in 1938.

Average-wage indices from U.S. Dept. of Labor statistics. Union "76" gasoline prices are Los Angeles posted prices, excluding Federal and State taxes.

This series, sponsored by the people of Union Oil Company, is dedicated to a discussion of how and why American business functions. We hope you'll feel free to send in any suggestions or criticisms you have to offer. Write: The President, Union Oil Company, Union Oil Building, Los Angeles 17, California.

UNION OIL COMPANY
OF CALIFORNIA

INCORPORATED IN CALIFORNIA, OCTOBER 17, 1890

Manufacturers of Royal Triton, the amazing purple motor oil