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BULLETIN

AUGUST 1927

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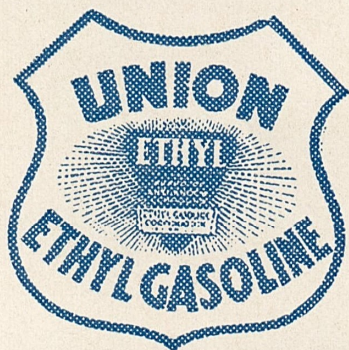
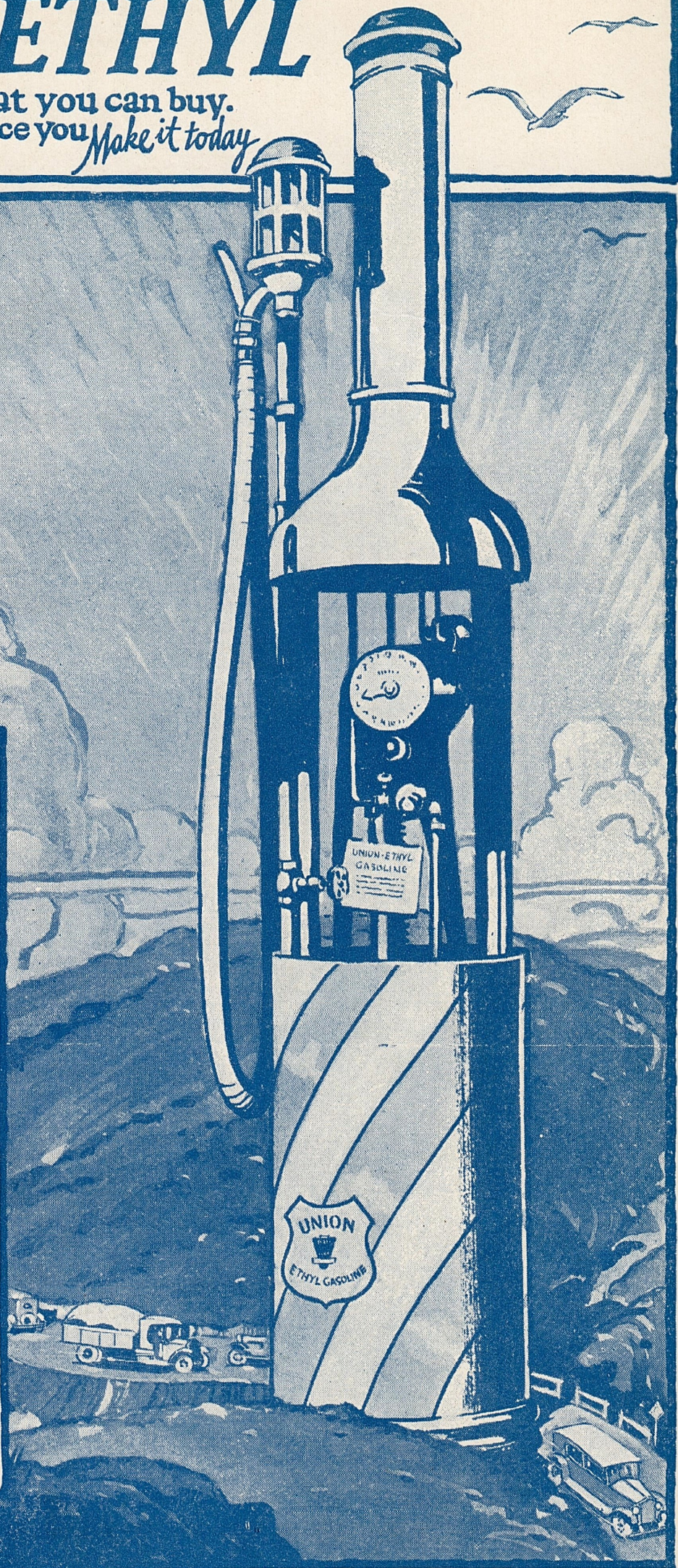
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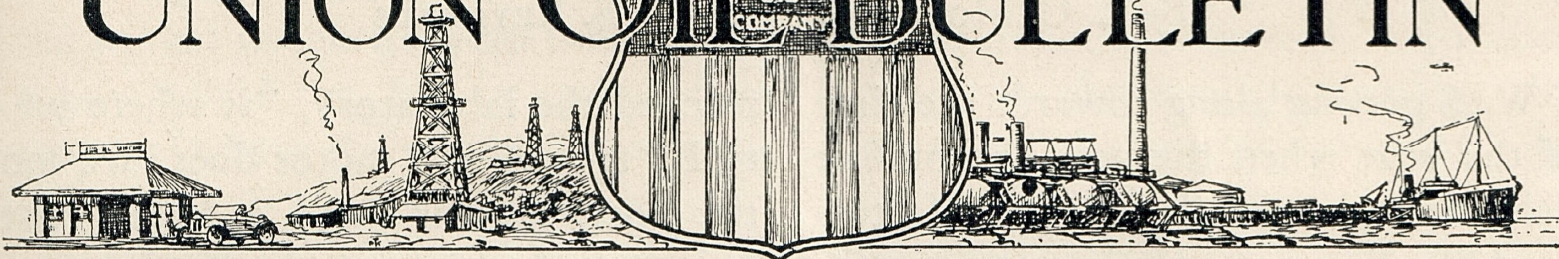


Union-ETHYL

The Super Motor Fuel

Union Oil Company

UNION OIL BULLETIN



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VOLUME VII

AUGUST, 1927

BULLETIN No. 6

Our Interest in Aviation

UNION OIL COMPANY of California has a three-fold interest in aviation. As a large organization it has a privilege and duty in fostering the development of aviation as a means of human progress; as an industry having widespread activities, aviation offers a means for more efficient transaction of its business; and as a producer of motor fuels and lubricants it can look toward aviation as an important market for its products.

We are now patronizing air mail extensively in our business, and can we not individually make more frequent and advantageous use of this service? One additional letter a week from each of us would substantially increase the air mail business.

Aviation events in the news indicate the rapid development of this means of transportation and accurate information regarding it is becoming more readily obtainable from innumerable sources. To provide a ready channel for such information to members of our organization, it is planned to devote a part of the monthly Union Oil Bulletin to aviation, presenting articles and statistics written by men who have closely followed the development of this science.

L. P. ST. CLAIR,
Vice-President

Mr. Buyer Visits Dynamometer Laboratory

By C. C. MOORE, JR. AND M. S. REYNOLDS

IT WAS getting along towards the time of the year when the new automobile models are announced by the manufacturers, and Mr. Buyer was beginning to notice strong symptoms of that well-known disease commonly called "Motoritis." He wasn't sure whether or not the old check book would stand a new car this year, but knowing that something must be done about it, he decided to go on a hunt for the latest information or dope about automobiles. Mr. Buyer had heard about the dynamometer laboratory of the Union Oil Company, and having a friend who had a friend, etc., arrangements were made for him to go down to Wilmington and see what he could learn about the latest doings in motordom.

Armed with the very necessary pass, Mr. Buyer presented himself at the Refinery gate, and, after passing Oscar's coldly critical eye and obeying the royal command "Leave your matches," was escorted up to the laboratory and introduced to Motor Mike in his sanctum. Motor Mike was hot and dirty but in an altogether cheerful frame of mind, for, as he told Mr. Buyer, he was "just ready to test out a new motor on the dynamometer."

"Dynamometer?" said Mr. Buyer, with a rather puzzled expression.

"Sure," replied Motor Mike, "and don't feel bad because you don't know what it is, for most of my visitors are in the same fix. Come on down to the dynamometer laboratory, and I will show you what it's all about."

"This," said Motor Mike, after he had

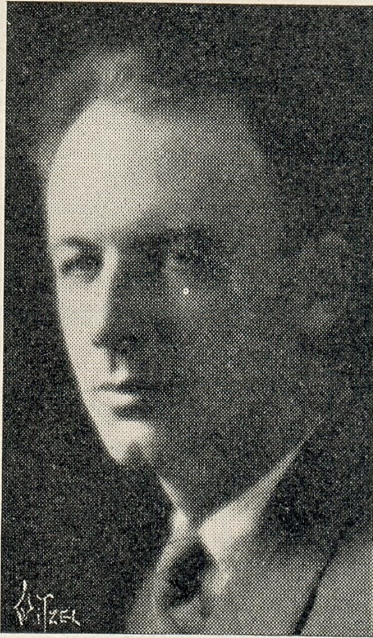
reached the laboratory, "is where we can really tell what a motor does. We mount the motor on this stand, and then connect it directly to this large electrical generator, which is called a dynamometer, or "power-meter." The electricity generated is absorbed in a bank of resistance coils, and by means of this control board the load on

the motor can be varied from nothing up to the stalling point of the motor. We could, of course, measure the electricity generated, but it is more direct and satisfactory to mount the generator on trunnions at either end so that the whole machine can turn a little, and then measure the force re-

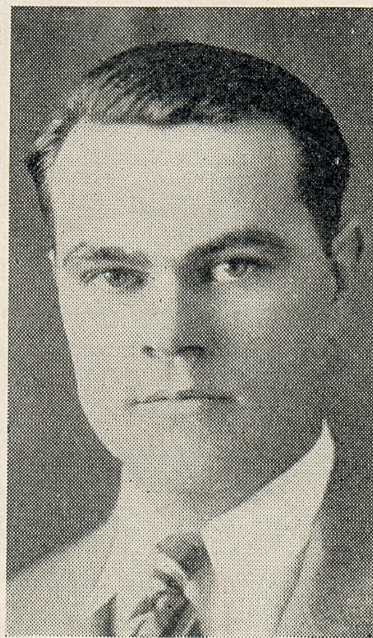
quired to keep it from turning by means of the spring scale that you see. The point of attachment of this scale is at such a distance from the center of the shaft that when the scale reading in pounds is multiplied by the revolutions per minute and then divided by a thousand, the product is the brake horsepower the engine is developing."

"Sure," said Mr. Buyer, with a sort of dazed expression.

"Over there in the corner is a radiator or cooling system," went on Motor Mike, "and it is so designed that we can hold the cooling water temperature at any point desired. The temperature of the outlet water is indicated by this thermometer here on the instrument board, and the number of revolutions per minute that the motor is turning is shown by this electrical tachometer, or glorified speedometer. Now here on the far side of the generator is the device



C. C. MOORE, JR.



M. S. REYNOLDS

we use to measure the accelerating ability of an automobile engine. It is simply a fly-wheel, weighing about 400 pounds, and designed so that its inertia is the same as that of a 3500-pound car, for, in acceleration, you not only have the wind resistance and road friction to overcome, but you must also overcome the inertia of the car, and this is by far the greatest part of the load."

Mr. Buyer was beginning to perspire gently, and at the same time to wonder just how much he didn't know about an automobile.

"Well," said Motor Mike, "I guess we may as well start the test of this engine. It's of a new design, and I rather imagine that you will see some surprising things." Motor Mike then closed the switch on the control board and the generator, for the moment acting as a motor, turned the engine over at a very good cranking speed. After the engine had started and warmed up for a few minutes, some other switches were closed, the engine throttle opened, and, as Motor Mike expressed it, she "began to do her stuff." The electrical tachometer read 2000 r.p.m., and the scale hand was pointing to 25, which meant 50 H.P. being generated. The hand of the recording thermometer on the control board began crawling up to 150, 160, 170, and finally reached 185° F. At the same time the motor was making a most horrible racket, sounding as though all the wrist pins were loose.

"Huh," said Mr. Buyer, "I thought you said this was a new motor?"

"It is," replied Motor Mike with a grin. "Stick around a little and you'll be more surprised."

After a few minutes of steady running, during which the motor kept up its clamor, and after the various readings as to torque, speed, temperature, etc., had been taken, Motor Mike opened a valve and closed another valve. In a few seconds the clinking and banging noise the engine was making began to die down, and in about half a minute the motor was running as smoothly as one

could wish for. Several other surprising things were also happening. The scale hand that indicated the load the motor was pulling began to creep forward, and at the same time, the electrical tachometer showed 2200 r.p.m. A glance at the water thermometer showed 170°, rather than the 185° previously recorded.

After Motor Mike had taken a second set of readings with rather a satisfied air, and had shut off the motor, Mr. Buyer meekly inquired as to "just what had happened, and why?"

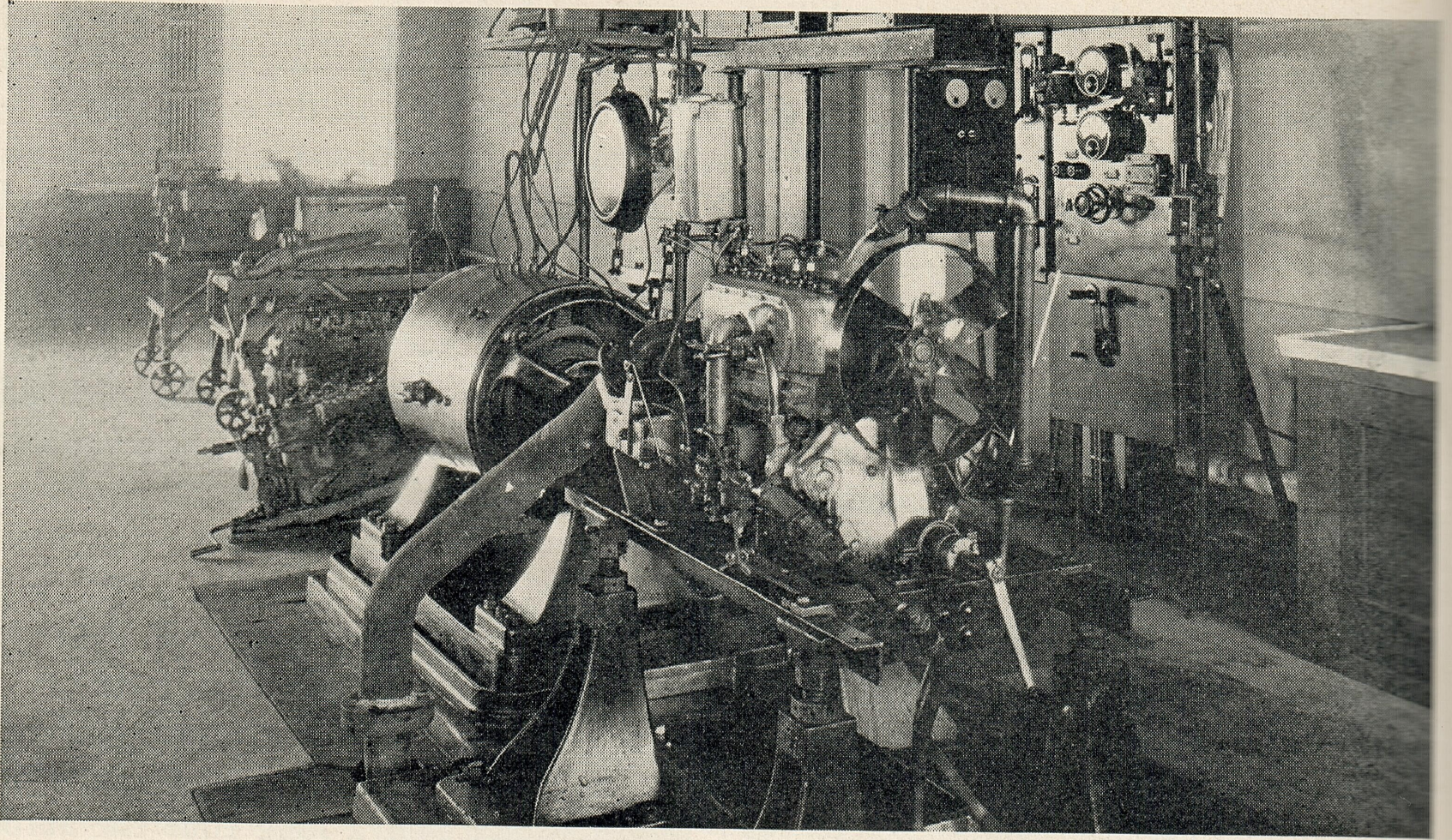
"High compression engine and Ethyl gasoline," replied Motor Mike, "the two go together, or rather one won't go without the other." "You know," went on Motor Mike, "for a long time the automotive engineers have known that the more highly they could compress a gas before igniting it, the more power could be derived from the resulting explosion. It is only in recent years, however, that they have been really able to take advantage of this well-known law, for with the fuels previously available to the motoring public, detonation occurred when the compression ratio exceeded a fairly well defined limit."

"Just what is a compression ratio?" asked Mr. Buyer. "I'm not very sure that I know exactly what you are talking about."

"Well, suppose that when the piston in a cylinder is at dead top center the volume above the piston is 10 cubic inches, and the entire volume above the piston when it is at bottom dead center is 50 cubic inches, the compression ratio is then 50 to 10, or 5 to 1."

"You mean that the final compression pressure would be 5 times the initial pressure in the cylinder, don't you?"

"No, as a matter of fact, it would be about 8 times the initial absolute pressure in the cylinder. When air is compressed, there is a certain amount of heat generated and this heat serves to increase the temperature and pressure. In technical language, we call this an adiabatic compres-



Dynamometer Set-up at Los Angeles Refinery

sion, which means that the gas, or air, is compressed so rapidly that none of the heat generated has a chance to escape to the containing walls, and it manifests itself solely in increasing the temperature and pressure of the gas. During the first part of the test that you just saw, the motor was detonating rather severely. This detonation, or abnormally rapid burning of the fuel charge, causes a loss of power and at the same time causes a considerable overheating of the motor system, and this has been one of the reasons why automotive engineers have not been able to employ high compression in the past. During the second part of the test, the gasoline supply was changed from ordinary gasoline to Ethyl gasoline, and, as you observed, this resulted in a suppression of detonation, with consequent increase in power and also decrease in heat given off to the cooling water. Detonation may be partially suppressed by improvements in mechanical design, as the shape of the combustion chamber, location of spark plugs, etc., has a great deal to do with the burning characteristics of the fuel charge. The advent of Ethyl gasoline, however, has made possible the use of a much higher

compression ratio, and many of the large and prominent manufacturers of automobiles are taking advantage of this fact."

"If a high compression engine is subject to detonation with ordinary gasoline, just why should the manufacturers want to build a high compression engine?" asked Mr. Buyer.

"Well," said Motor Mike, "there are several reasons. For example, just what particular characteristics in an automobile do you look for when buying a new car?"

"Performance," said Mr. Buyer. "I want a car that will step out, and once in a while when the road is clear, I like to step on it and see just how fast the bus will go. Also, when I'm in traffic, I want the car to handle smoothly, and when an opening occurs, or sudden emergency demands it, I want quick, snappy acceleration."

"That," said Motor Mike, "is just one of the things you get with a high compression motor. For example, let us compare a motor of $4\frac{1}{2}$ to 1 compression ratio with one of the newer designed motors with a 6 to 1 compression ratio. The thermal efficiency of the 6 to 1 compression ratio motor is approximately 15% greater than the

$4\frac{1}{2}$ to 1 ratio motor, and this means an increase in speed, acceleration rate, and fuel economy. At the ordinary driving speed of from 30 to 40 miles per hour, the high compression motor is especially efficient, as better scavenging of the cylinder is obtained. At these normal driving speeds only a partial charge of gasoline and air enters the cylinder, as the throttle prevents the free flow of the gasoline vapor. The burned gas remaining in the cylinder from the previous explosion is a considerable proportion of the entire charge, much more so than when the motor is running at full power with a wide open throttle. With a high compression engine, the proportion of this inert gas in the total charge is much less than in the low compression engine, because more of the burned gas is expelled on the exhaust stroke and therefore less is left to dilute the coming charge. This condition results in higher efficiency, as power is produced by heat, and in this case there is more heat available for use as power, as less of it is used to raise the inert gas to the temperature of the combustion. This is in addition to the fact that the fuel will burn more efficiently at the higher compression."

"As to speed," went on Motor Mike, "the present day racing car is a good example of what can be done with a high compression motor. The present 90-cubic inch racing car has an effective compression ratio of approximately 7 to 1, and can develop a speed of better than 150 miles per hour. Not so many years ago the racing cars had a cylinder capacity of approximately 600 cubic inches and developed a speed of around 80 miles per hour. Very low compression ratios were used in those days, and as a consequence very poor fuel economy and engine efficiency were obtained. Of course, these modern racing cars require a special fuel, such as Ethyl gasoline, otherwise the detonation would be so severe as to destroy the engine."

"Why wouldn't it be a good idea for me to shave off the head of my old bus and in-

crease the compression ratio to 7 to 1?" asked Mr. Buyer. "I can buy Ethyl gasoline nearly any place now."

"No, I'm afraid you'd lose your engine. By increasing the compression ratio the mean effective pressure of the combustion is increased, but at the same time the maximum pressure of the combustion increases at a much faster rate. This means that in an engine designed for a low compression ratio, the bearings, connecting rods, wrist pins, etc., would not stand the strain imposed by the maximum pressure of the explosion, and in a very few hours of running the motor would be worthless. The motor must be designed throughout for these high pressures, and although most of the present day cars could be operated satisfactorily with an increased compression pressure, it is a ticklish business, and unless the motorist is familiar with the subject, it should not be attempted. We have reliable information, however, that in the near future there will be several cars on the market with high compression engines, properly designed to stand the extra strain imposed by the more efficient engine performance, and it is my opinion that in a few years, the low compression engines will be obsolete."

"But if I have to pay an extra premium," interrupted Mr. Buyer, "what good does this fuel economy do?"

"The saving in gasoline will probably be more than enough to offset the price differential required for Ethyl gasoline," said Motor Mike, "and as a bonus you get the smooth performance, increased speed and acceleration, and better hill climbing ability. You know, it's one of the characteristics of the American public that they don't like to shift gears."

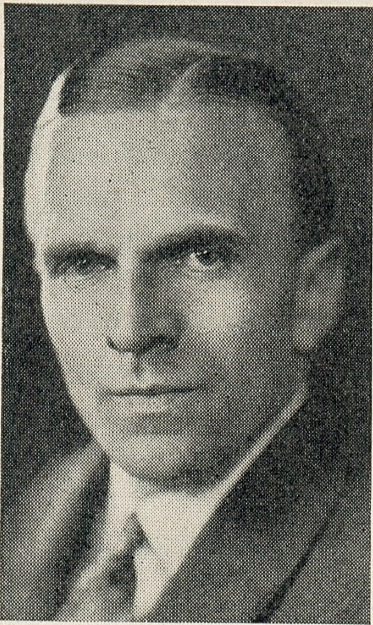
Mr. Buyer's eyes had gradually been taking on that glitter characteristic of the last stages of motoritis, and, clasping his check book in one hand and mumbling something about "idiomatic ratios" and "compression gears," told Motor Mike goodbye and headed for automobile row.

The Old and the New

By CAPT. T. A. TARACOUZIO

While acknowledging the tremendous development in aviation in the past few years, Captain T. A. Taracouzio, in the following article, pays tribute to the old school of fliers whose contributions to the advancement of the science were carried on under war-time conditions, with human lives as the pawn. Captain Taracouzio is employed in the Patent Division. —THE EDITOR.

IN THE last month's Bulletin was published an article entitled, "THE AIR ERA DAWNS," by C. F. Lienesch, in which



CAPT. T. A. TARACOUZIO

the author points out the importance of the future of aviation. No one will deny the truism which was so clearly illustrated in this treatment. There is one question, however, which comes to mind; is it proper to say that the man's mastery of the air still remains in the stage of its dawn in face of the progress that has been made in the last twenty years? Prior to proceeding with the following, a few introductory lines are needed in order to explain why, for myself and my fellow-fliers of the earlier days, I feel entitled to put such a question forth.

In 1915, when the United States was still in doubt whether or not to take part in the great war, and almost two years before a final decision was made, I had the honor of being assigned to the Russian Imperial Academy of Aviation and Aeronautics in Gatchina to take the course of actual flying. A few months later I was graduated with the Flier's Diploma and as a First Lieutenant of the Imperial Army was assigned as an Officier-de-liaison with the French Aviation Mission in Roumania, and was ordered to flying duty to the group N 10. The following story is short. Dobrudja, Transylvania, Bessarabia. Flights and Fights. Fights and Flights. Finally, a Ger-

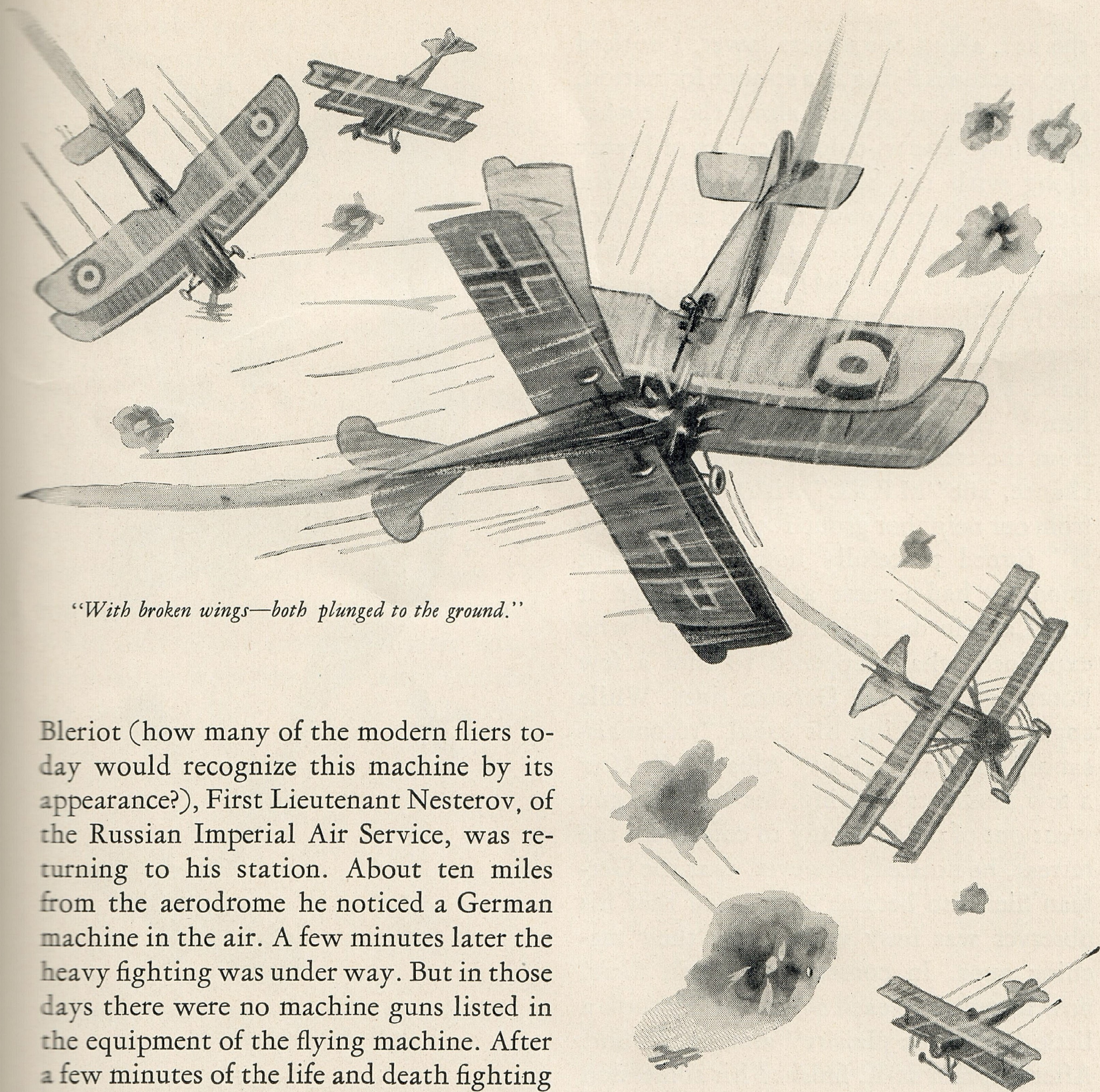
man bullet through my jaw, the fall, unconsciousness, hospitals, and six months later the honorable discharge with the rank of the Senior Captain, broken legs, renewed face, and somewhat of smiles: "Lucky, don't you think so?" When the Stars and Stripes first appeared in France, the flying career of the writer was over.

And now, after the last decade has seen such an enormous progress in the aviation, may I ask if the Air Era merely dawns today when automobiles and pianos are cargo of modern flying monsters? Or did aviation have its dawn twelve or fifteen years ago, when the unprotected spirit of human adventure and novelty was the sole companion of the pilot?

In those days there were no parachutes or other means to secure for the flier a safe landing in case of catastrophe, not to mention parachutes for the airplanes themselves, as was recently successfully developed in San Diego. In those early days there were no accommodations for night flights nor landings in the darkness as is the case today everywhere along the mail and passenger air routes. Nor could the flier of those days depend blindly on the reliability of his 80 or 100 horsepower engine, this being partly due to the construction of the engine itself and partly to the qualities of the gasoline and oil.

A few illustrations will, indeed, suffice in showing the difference between the old and the new times, and simultaneously to justify our contention that the old order of flying was not without purpose or accomplishment.

1914. Flying a real "Old-timer," the tiny



"With broken wings—both plunged to the ground."

Bleriot (how many of the modern fliers to-day would recognize this machine by its appearance?), First Lieutenant Nesterov, of the Russian Imperial Air Service, was returning to his station. About ten miles from the aerodrome he noticed a German machine in the air. A few minutes later the heavy fighting was under way. But in those days there were no machine guns listed in the equipment of the flying machine. After a few minutes of the life and death fighting his revolver was empty. So was the rifle of his observer-officer. Responding to the call of his conscience to do his duty, Lieutenant Nesterov headed his machine against the enemy. With broken wings—both enemies, the German "Albatros" and the Nesterer Bleriot, plunged to the ground. Thus the first victims of an air duel during the Great War met their glorious death. There was no thought of parachutes in those pioneer days. All they had in their machines was the spirit of novelty and duty.

DOBRUDJA. Busy Fall of 1916. Six o'clock in the morning. Rush order by telephone. Cold shower. A sandwich and cup of coffee. Start. Five hundred meters. One thousand. Two. High enough. Forward!

The German lines already somewhere behind. At the left of the horizon the snow-white City of Constanza; at the right—the semi-Turkish and semi-Bulgarian town Medjedie. My "Baby" (Bebé Nieuport XXI) and I are two in one. The 110 H. P. "Rhone" sings its steely melody of the morning. The sky is "clear," which means there were no German machines in the air. Seven-thirty. Almost time to return. Again the German-Bulgarian-Turkish lines far below. The altimeter still shows 2,000 meters. Everything seems to be quiet, peaceful and pleasant, especially the dreams of another cup of coffee after the landing. Suddenly at

the left, about 800 meters lower, I noticed two machines flying in a strange formation, side-by-side, above and along the trenches far below. The tri-colored circles of France along with the black Iron Cross of the Germans! There was no time to think. Once more, forward! Ta-ta-ta-ta. . . The German flier waved his hand and immediately landed safely behind their lines. He simply did not respond to my invitation. On the other hand, there was no reason for me to follow him to the ground, for the machine guns from the trenches offered a nowhere equal chance. The "M F XL" with Captain de-R. from our neighbor group F.5 and my "Baby N" turned peacefully homeward. About noon, we had a guest at our aerodrome. It was Captain de-R. with his "M F" who explained what happened to him a few hours ago over the German lines. While engaged in making his usual "reconnaissance," he had met an "Albatros." After a few moments of firing, his machine gun went out of order. Ready to commence the retreat, he noticed, however, that the German flier also became silent, and that his observer was busy with fixing their machine guns. In consequence, both fliers, now harmless to each other, simply took a little "partie de plaisir" along the front. After Captain de-R. finished his confession of such a quite unusual experience everything was clear. All I could do was to apologize before him for interrupting their "party," which I could by no means detect while flying 2,000 meters above the German lines.

One may ask why they did not follow the example of Nesterov? The answer will be very simple. Indeed, a new feeling was at that time already alive among the fliers. Not to kill, but to force your enemy to land alive was the new spirit of the fliers who had already heard the whistling of bullets, seen the flames of burning airplanes, and saw the pain of broken bones. The hatred gave way to the reciprocal respect and appreciation of the feelings that were com-



"In those days there were no parachutes to secure for the flier a safe landing."

mon in the fliers of every nation in those earlier days—the spirit of "Forward, Man!"

With this new attitude the days of war were passing on in the usual routine. Flights and Fights. Fights and Flights. Soon also my day came. I remember one question which I was asked later while in the hospital: "What would you do with the flier who 'brought you down,' Captain?" "Nothing," was the answer, and I never have changed my mind. "Nothing," I repeat once more, now after a full decade has passed since that morning when I had my last flight. Indeed, everything was so simple. Clear, sunny morning. The German lines about eight miles behind. The altimeter shows about 1,800 meters. The engine running smoothly. The fighting with "Alba-

ros" was also a usual one. Looping, wing-slides, nose-dives. Then came the moment when my machine gun fired the last bullet. To escape the firing of the German machine, I was forced to turn my "Baby" homeward and to gradually descend in order to increase speed. The "Albatros" was quick enough to follow me. At about 1,000 meters a bullet pierced my jaw. All I had time to feel was that I must bring my machine home in safety. The lines were under me. 500 meters. Blood. "Albatros" still behind. Suddenly on the right another German. It was an "Aviatic" speeding from the City of Galatz. I heard clearly his ta-ta-ta. 300 meters. 200. I was already within our lines. Below was the forest of Tudor-Vladimirescu. The story ended sooner than I had expected. When only about 100 meters were left, a stray-bullet from the "Aviatic" finished the work of the "Albatros." The right wing of my "Baby" was broken. It was not until evening that I regained consciousness. The white room of the Roumanian Hospital in Galatz began a long period of monotonous hospital life for the writer, which was the lot of so many. Nothing, I repeat once more, would I say to that gallant German flier who fought and wounded me in my last flight. Nothing, because I am sure he did not want to see me die. And, after all, it was not his fault that there were no parachutes in those earlier days, which would secure a safe landing for my wounded machine that morning ten years ago.

As years pass the development of aviation is tirelessly progressing. Setting aside all technical, theoretical and economic features of the changes which took place and are so correctly illustrated in article by Mr. Lienesch, may one more factor be mentioned in relation to the Dawn of the Era of Air? It is obvious, that whatever the practical development might be, an original idea is always necessary. This comprises the novelty which in its turn always involves the uncertainty of the first experiments. The

required price for the latter is always a sacrifice, in whatever form it may occur. Unfortunately, for aviation as for many other things this price is human life. Lilienthal, Pegou, Wright, Latham, Nesterov, Lufberry, Luke, Von Richtofen, Boelke, Immelman, Guynemair, and numerous of those who fell while flying over the battle fields of fighting Europe—are the price for the survival of the idea of conquering the air.

Today, when the motto "Time is Money" has become the Eleventh Commandment of human behavior, airplanes are indeed the angels of this modern heaven. Speed shortens distances and shortened distances reduce time. To shorten time in order to increase the circulation of the almighty dollar, and to multiply in this manner its rapid return is exactly what humanity wants and what the commercial airplane furnishes. Commerce, economy, science, and, (let us hope,) to some extent, the esthetics of pioneers—all are subject to the new winged phenomena of today. Comparing thus the old and the new, it is safe to say, that only the forms, or the reasoning, differ, while the main goal—to master the air—will remain always the same.

Therefore, in the name of the noble sacrifices of those who in the early hours were awake with the idea of conquering the sky, while the world was asleep, and who died before the daylight—the Glory of Dawn be theirs! To them belongs the Glory of working before the dawn, because, today, when the Atlantic and Pacific already are at the will of the flying men, we see the real beginning of the work. The present development of aviation is rather the first flush of the bright morning which we enjoy. In face of the possibilities which are open for the future generations, we have to educate ourselves in this line to appreciate the progress made and be ready to work hard, for it is yet far from the noon. At the same time always remember those who worked in the darkness and who never saw the daylight, for they died at "DAWN."

Service Pins for Employees

By GERALD G. BLUE

ON July 11th, 1927, W. L. Stewart, President, approved a plan whereby service of employees would be recognized by the company with the presentation of an appropriate emblem to those with service of ten years and over. The plan contemplates the distribution of emblems with the proper ceremony to six hundred ninety-eight employees who have been in the service of Union Oil Company from ten to thirty-three years. The emblem with name and date of employment engraved on the back is to become the personal property of the employee when he has completed ten years' service.

For each additional five years thereafter, until thirty-five years have been reached, a ruby will be added, set in the lower part of the shield. Upon completion of thirty-five years a diamond will be set in the flame of the torch.

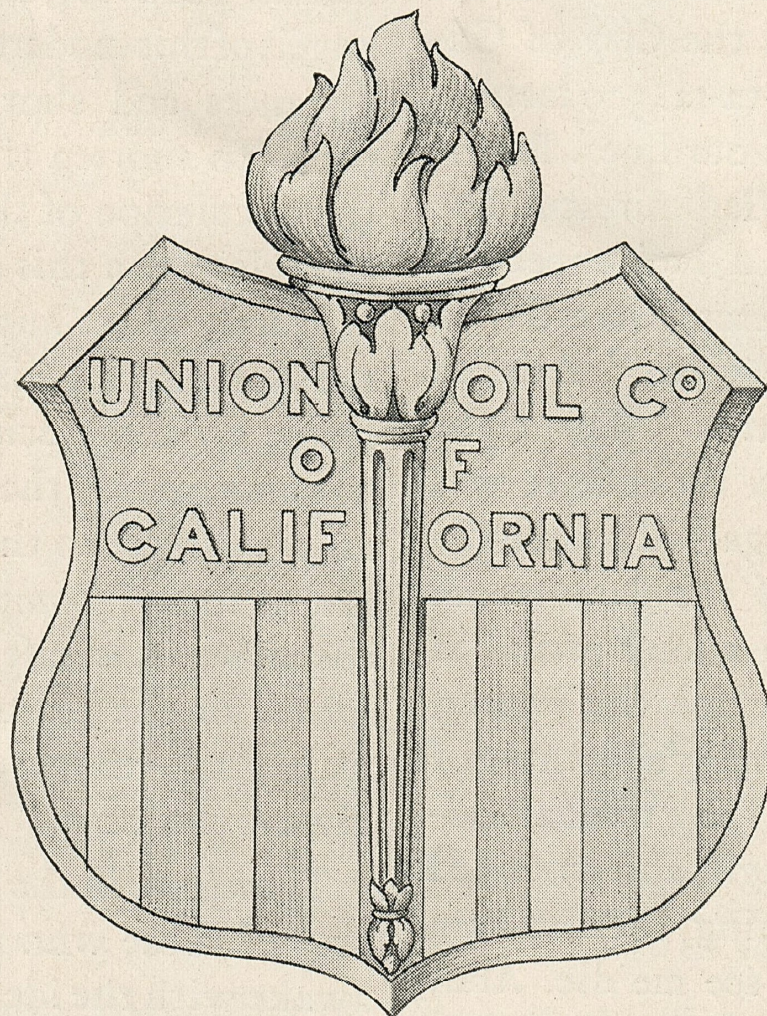
This plan has been under consideration

for some time and is heartily endorsed by all of the department managers of the company, and from many personal interviews we feel that it will gratify a desire on the part of many of the older employees for a recognition of their long years of service with the company, of which they are justly proud.

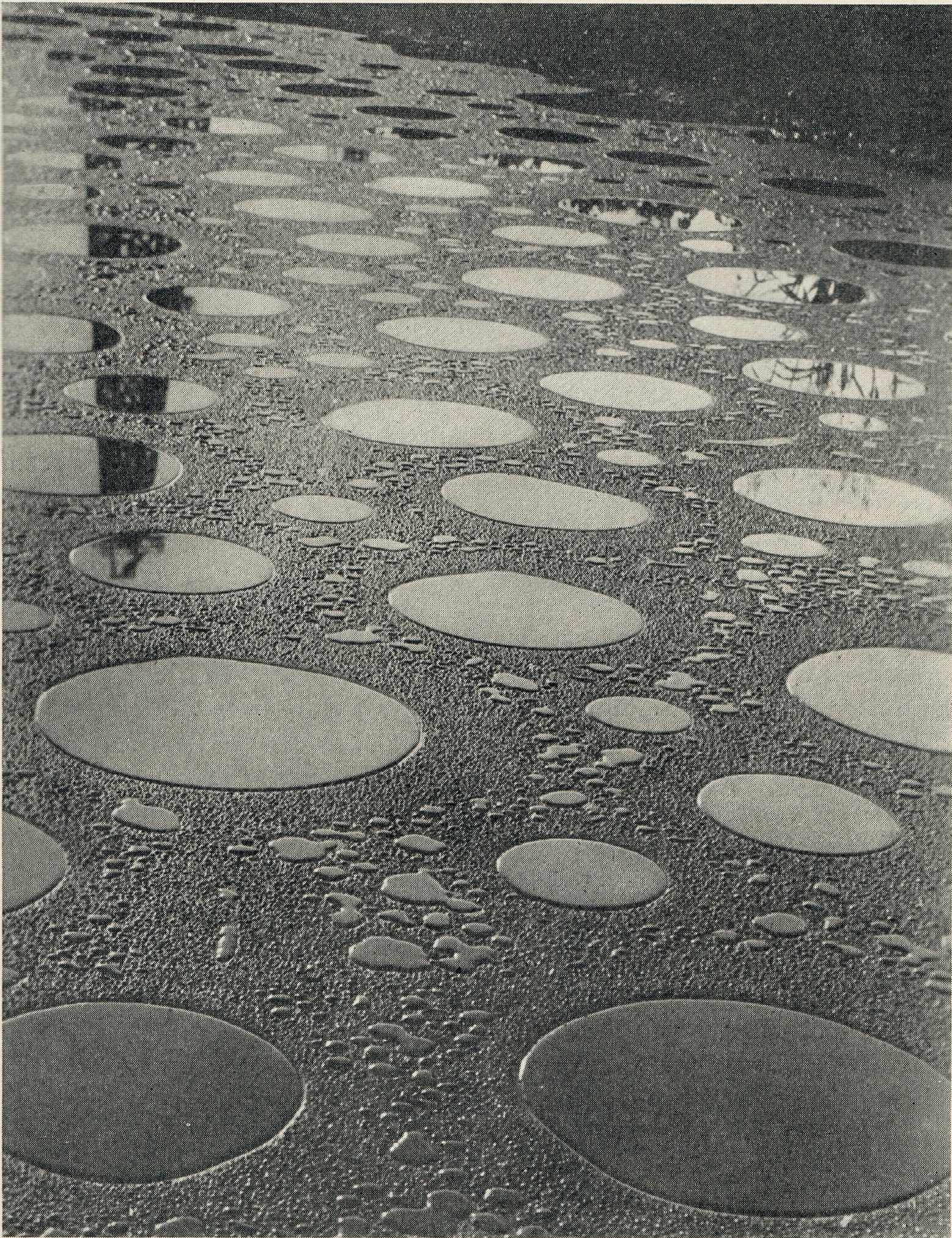
The emblem may be looked upon as a tangible acknowledgement of faithful service, and act as a further binding link between the employees and the company.

The date on which these emblems will be presented, and other details in connection with the proper presenta-

tion by the President or other senior official of the company, are at present being worked out by the Insurance and Personnel Department, and full particulars of the plan will be announced shortly. The pin, many times enlarged, is shown in the accompanying sketch.



“Unpremeditated Art”



Courtesy Oil Bulletin

AFTER THE SHOWER

This is not a telescopic view of the craters on the moon. It is a close-up of an oil sump in Southern California after a light rain. Note reflection of derrick in upper left.

Six Months in Review

By L. P. STOCKMAN

TWO NEW oil fields have been discovered in California since the first of the current year, one at Goleta and another in the Round Mountain district of Kern County. Both are relatively shallow fields but the similarity ends there, however, for in contrast to Round Mountain, the former has the distinction of yielding a higher gravity oil than any other field in the State at the present time. The only exception to this is in the prolific Ventura Avenue field where a freak well is producing a barrel or two of 60 gravity oil daily from a depth of 751 feet. This exceedingly high grade oil is not characteristic of Ventura Avenue and incidentally the well in question came in of its own accord after the hole had been abandoned because of mechanical difficulties resulting from an unusually heavy gas pressure. In this connection it is interesting to note that there are several natural seepages in California of high grade oil which in some cases can be introduced directly into an automobile tank. Another area yields an oil so rich in lube stock that it has on many occasions been used to grease wagons, tractors and stationary equipment. The Goleta field, discovered during the latter part of February, is located some twelve miles west of Santa Barbara and about thirty-five miles northwest of the Ventura Avenue field in a low, hilly country and within a stone's throw of the Pacific Ocean. The average completion depth in this area is roughly around 1,300 feet from which point a 40 to 43 gravity oil is secured under a natural flow. The crude runs from 55 to 65 per cent gasoline and the natural gas which accompanies the oil is exceedingly rich, having a saturation of approximately five gallons of casinghead to each 1,000 cubic feet. There were three wells producing in the Goleta

field during the month of June, the average well production being slightly in excess of 125 barrels per day. The Round Mountain field, located approximately sixteen miles northeast of Bakersfield in Kern County, was discovered in May of this year and while present production is more or less comparable to the crude secured at Mount Poso in that it is rather heavy, indications previous to completion showed the presence of a little light oil. The possibility of commercial production of light refinable crude in this section has not been definitely ascertained although the discovery well failed to show any great evidence along this line and the outlook is not any too bright.

California production of crude oil is still far in excess of normal requirements necessitating the shipping of a part of this surplus to Atlantic and Gulf coast ports. Intercoastal shipments were inaugurated back in 1922 and have continued uninterrupted ever since with no let up yet in sight. During the first half of 1927 a total of 16,746,655 barrels of California crude and refined oils have been tankered to the east coast in addition to the 21,807,711 barrels transported to Pacific and Atlantic foreign ports. Total liftings during the first half of this year, representing the sum of the two preceding items, aggregated 38,554,366 barrels, a daily average of 213,007 barrels. To the casual observer this does not mean very much and a single comparison might therefore prove interesting. To put it another way, California's total shipments in the intercoastal and export trade during the first six months of 1927 exceeded the entire State crude oil production during the year 1906. The total daily average shipments during the first half of 1927 were larger

Production of Crude Oil in California by Districts
JANUARY TO JUNE, INCLUSIVE, 1927
 (Figures are in Barrels of 42 gallons)

DISTRICTS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	TOTAL	DAILY
Kern River.....	410,327	384,829	406,020	418,502	436,010	469,917	2,525,605	13,954
Mount Poso.....	6,983	5,807	5,165	3,837	2,329	1,835	25,956	143
Round Mountain.....	—	—	—	—	600	5,400	6,000	33
McKittrick.....	163,990	144,100	159,572	157,981	157,529	155,847	939,019	5,188
Midway-Sunset.....	2,804,775	2,508,363	2,747,956	2,765,445	2,795,270	2,689,538	16,311,347	90,118
Elk Hills.....	1,064,069	958,011	1,037,339	861,597	770,144	750,365	5,441,525	30,063
Lost Hills-Belridge.....	149,377	131,711	150,937	127,175	118,604	113,918	791,722	4,374
Coalinga.....	616,785	556,294	608,235	620,227	622,112	595,264	3,618,917	19,994
Wheeler Ridge.....	32,641	29,155	34,671	31,482	31,784	31,167	190,900	1,055
Watsonville.....	1,733	1,610	1,783	1,725	1,782	1,725	10,358	57
Santa Maria.....	143,862	138,835	151,587	152,057	154,352	166,894	907,587	5,014
Summerland.....	4,260	3,653	4,095	4,565	4,185	4,215	24,973	138
Goleta.....	—	1,320	8,434	5,686	5,019	11,060	31,519	174
Ventura Avenue.....	1,672,863	1,420,663	1,582,258	1,552,439	1,258,003	1,124,917	8,611,143	47,575
Ventura-Newhall.....	170,731	169,466	186,107	187,252	188,333	178,787	1,080,676	5,971
Los Angeles-Salt Lake....	53,827	51,292	54,935	54,449	54,078	53,483	322,064	1,779
Whittier.....	60,992	50,568	59,783	55,894	63,436	53,246	343,919	1,900
Fullerton (Brea-Olinda) .	781,596	687,850	752,615	677,683	491,396	507,081	3,898,221	21,537
Coyote.....	475,109	415,475	439,132	435,557	442,606	412,259	2,620,138	14,476
Santa Fe Springs.....	1,385,438	1,242,663	1,343,482	1,299,386	1,330,515	1,260,192	7,861,676	43,435
Montebello.....	542,255	464,512	506,456	483,650	476,221	455,786	2,928,880	16,182
Richfield.....	630,989	592,107	637,333	643,656	656,686	659,653	3,820,424	21,107
Huntington Beach.....	2,859,859	2,348,505	2,407,779	2,304,611	2,384,783	2,194,400	14,499,937	80,110
Long Beach.....	2,869,492	2,607,046	2,933,300	2,801,022	2,854,887	2,803,829	16,869,576	93,202
Torrance.....	799,286	702,369	752,150	727,090	738,577	700,283	4,419,755	24,419
Dominguez.....	572,291	519,610	565,911	514,956	508,025	477,430	3,158,223	17,449
Rosecrans.....	371,085	329,345	336,596	349,662	315,819	280,510	1,983,017	10,956
Inglewood.....	1,226,347	1,071,948	1,154,475	1,114,072	1,110,955	1,031,140	6,708,937	37,066
Newport.....	1,005	1,347	1,246	1,625	1,471	1,164	7,858	44
Seal Beach.....	312,905	444,257	806,372	1,140,542	1,530,543	1,990,137	6,224,756	34,391
Total.....	20,184,872	17,982,711	19,835,724	19,493,825	19,506,054	19,181,442	116,184,628	641,904

than the daily average crude oil production during 1910 and only slightly less than the average maintained during the year 1911. During the first half of this year, California operators produced 116,184,628 barrels of crude oil, Long Beach, Huntington Beach, Midway-Sunset, Ventura Avenue, Santa Fe Springs, Inglewood and Seal Beach contributing 77,087,372 barrels of the total output. In addition to the actual production which averaged 641,904 barrels daily during the first six months of this year there were an additional 65,639 barrels per day shut in. The total potential output, therefore, with everything wide open, would have averaged 707,543 barrels each day during the first half of 1927. Wildcat operations are continuing unabated, although in contrast to conditions existing heretofore, prospectors are concentrating their activities in the San Joaquin Valley and up along the coast in Ventura, Santa Barbara and San Luis Obispo counties. These areas have been more or less inactive during the past few years due to flush production conditions in the Los Angeles basin which started along back in about 1922. This trans-

fer of operations will no doubt result in the discovery of several new fields during the course of the next few years and it is quite possible that one and perhaps two new fields will come into being before the close of 1927. Ventura County seems to be on the verge of yielding another new field in the Seaciff-Rincon district located about ten miles northwest of the Ventura Avenue field with indications pointing to a light oil district. Kern County may also contribute another field before Christmas rolls around as the Edison, Greenfield and Union Avenue districts look rather promising in view of the recent discoveries. The Union Oil Company, first concern in California to definitely establish an organized geological department, has played an important part in past discoveries and will no doubt be instrumental in opening up additional fields in the future.

(Since this article was prepared, a wildcat in the Union Avenue district at Bakersfield, mentioned above as having production possibilities, blew in, making approximately eight million cubic feet of gas daily.)

More About the Patent Policy Plan

By PHILIP SUBKOW

Patent Engineer

SINCE the official announcement of the Patent Policy Plan, the Patent Division has been requested on numerous occasions to explain some of the terms of the plan and the procedure under the plan, and to help various inventors in obtaining the full benefits of the protection which the plan insures them. The purpose of this article is to explain some of the features of the plan and so to answer many questions which may have arisen in the minds of the inventors. Many of the difficulties will be solved, it is believed, by a definition of the terms employed and an explanation of how the plan will act to protect the inventor. Due to the nature of this discussion, the definitions and statements are, necessarily, not technical. They do not purport to state the law as applicable to all cases, but are merely to indicate general principles and the spirit thereof.

The Patent Policy Plan is concerned with patents. Patents are obtainable for inventions and are based on disclosures. The plan, in part, operates by determining the patentability of such disclosures. It specifies that on sale, or license, of the patents to others the company will share with the inventor in the profits thus obtained. If the proposed invention is not accepted, the disclosure is returned to the inventor, the company keeping only such shop rights to which it is legally entitled.

A Patent is a grant by the Government of the exclusive right for a period of seventeen

years to make, use or sell, an invention defined by the patent. Contrary to the popular conception, a patent does not insure to the owner of the patent the right to make, use or sell, the invention. It is, on the contrary, a right to exclude others from the benefits of the invention. Whether the patentee can make, use or sell, his invention depends upon whether in so doing he will

infringe other outstanding patents, the owners of which have the right to exclude him from making, using or selling, the invention covered by their patents. Thus, an owner of a broad patent may not be able to use an improvement which is vital to the practical success of his invention, and the patentee of the improvement may also find himself unable to operate under his patent,

because he will infringe the broad patent. This forms the logical basis for a trade whereby both patentees may profit by cooperating and pooling their patents.

A patent is said to be a contract whereby, in consideration of a complete disclosure of a new and useful invention, the Government will give the right to exclude others from the enjoyment of said invention. It will be seen that there are two considerations for the grant. First, a complete disclosure, and second, that the disclosure be of a new and useful invention. No one has yet been able to define an invention. The courts have on occasions stated what is *not* an invention. Thus, a prominent textbook writer deduces eleven negative rules by

ON JULY 11th, W. L. Stewart, Jr. Assistant Secretary to the Administrators of the Patent Policy Plan, called a meeting of the Administrators at which eleven awards were made. Four of these awards were retroactive, those to T. F. Ott, Ralph C. Pollock, Robert A. Dunham, and E. G. Ragatz. The remaining seven awards were made on disclosures submitted since the establishment of the Patent Policy Plan and went to A. G. Page, F. W. Lake, Philip Subkow, B. O. Bushnell, Vladimir Kalichevsky, L. Adams and C. A. Peabody.

which a proposed disclosure can be tested to determine whether it does *not* disclose an invention; but there are no positive rules by which the disclosure can be tested to determine if it does disclose an invention. There are, however, certain general principles by which one may be governed in such cases. The most basic of these is whether, in view of all that has gone before, as disclosed in printed publications, in patents and in prior use by the public, the inventor has exercised more than ordinary skill in creating the alleged invention; if he has, invention resides in his disclosure, if he has not, there is no invention. We are, however, here as before, faced with another difficulty, for no one has yet been able to measure "ordinary skill." It, therefore, becomes necessary in every particular case, to consider all the elements present in any disclosure and to apply both the general patent law and such technical knowledge as is available and to determine for that particular case whether or not invention is present.

Novelty consists in newness. If the particular invention was never known or used by others in this country, or disclosed in any printed publication or patented before the date on which the invention was made, it is new. The effective date of a United State patent, for purposes of anticipation, is the filing date. If the anticipating publication or patent or public use, is more than two years old before the application is filed, no patent can be granted. Usefulness or utility in the eyes of the patent law means that it is not frivolous or contrary to good morals, and also, that it is capable of operating in the manner described. It has nothing to do with efficiency.

The other consideration, that of a complete disclosure, is also somewhat indefinite. It is said that a complete disclosure is such that anyone skilled in the art can, by the study thereof, make or use the invention disclosed. Here, as before, the standard of comparison is the skill or knowledge of the "ordinary man skilled in the art." His

skill must be gathered from a study of the common knowledge of persons in the particular art to which the patent relates. Since the grant of the patent depends on the disclosure, and the character and scope of the protection will depend on the manner in which the disclosure is drawn and on the claims made therein, it constitutes the heart of the patent and requires great care in its preparation.

An assignment is a conveyance or sale of the entire interest in the patent to another. By so doing the inventor divests himself of all interest in the patent. A license, however, is said to be a contract by which the owner of the patent agrees not to molest the licensee if he uses the invention. The patentee has a right to exclude others from the use of the invention. When he gives a license to another, he merely agrees not to exercise his right to exclude the licensee.

It is well settled that an inventor has no special right to his invention outside the protection set us by the patent laws. If he keeps it secret and this secret is betrayed he may have an action against the betrayer if he can prove the existence of some contract between himself and the betrayer by which secrecy was imposed on the latter. His patent protection starts from the date on which the patent issues.

This company feels, however, that just as an employee has an obligation to it, to promote its interests by aiding in the development of improved devices and processes by which its activities may be facilitated and made profitable; it should see that they are justly rewarded, even before patent protection starts. This company, like all other corporate employers, must depend on the activity, alertness, initiative and inventiveness of its employees to see that it has the tools with which to meet profitably an ever growing competition and an ever changing situation. It is true, the primary function of an employee is to do his job efficiently and profitably. This is, in the main, the measure of his value to the company. How-

ever, the duty of the employees to this company does not end by the doing of their jobs efficiently in the conventional manner, by the employment of the old tools and old processes, profitably, at the moment. The company has the right to expect that its employees will enable it to operate profitably if a change in the industry makes the old methods obsolete, or, if the situation is unchanged, to alter the process and tools so that a greater profit is realized. The person who combines this inventive initiative with a practical ability to operate the tools and processes now at his command is doubly valuable. This company has established a large staff of capable research men to search, and aid others in the search of these improvements, but also, it welcomes developments and inventions from its other employees. The company co-operates with the inventor to the end that his developments be protected and his work made to count to the maximum. It feels that the inventor has placed himself in a special position and it, therefore, is prepared to reward him. That is the purpose of the Patent Policy Plan. It plans to extend the benefits of the inventions to the public so that they may share in the advances devised by its employees. This policy also insures to the employee the advantages of participation in the just rewards thus obtained by sharing with him in royalties or other profits thus realized. This plan is a departure from the traditional policy of employers. It can be said, justly, that the rule is that inventions by employees belong to the employer because of special contracts of employment.

The policy of liberally rewarding the inventor, employed by the Union Oil Company, depends upon the co-operation of the various employees of the company. The best intentions may be futile if there is not a willingness on the part of all to merit them. The success of this plan will depend on the manner with which the inventors come forward with their inventions. It is understandable that each inventor believes

that his invention is worth fabulous sums, and it is true that in an industry of this magnitude, a small advance, yielding a small saving per unit, may in a short period result in large profits. In addition to this, there is the natural pride of the inventor in his creation. This results in a secretiveness and a fear that someone will steal the invention and so deprive him of his due share of money and glory.

Such an attitude has no place in the Union Oil Company. The Patent Policy Plan assures to the inventor that he will get just recognition for any invention that he may make. He may, if he wishes, call it to the attention of the Patent Policy Administrators direct. It is investigated, and the scope of his invention determined by the company. By submitting his disclosure duly executed, he has definitely defined his invention. No one can take from him any portion of his just reward.

The company is interested in obtaining the most from the inventiveness of its members. It, therefore, brings the various abilities and talents at its command to bear upon the problem to the end that they all co-operate and develop the invention. This is to the benefit of the inventor since it insures for him a speedier success. If other members of this company develop improvements, this is to the advantage of the various inventors and of the company. Each inventor is certain of protection for his invention. To him who has discovered the broad principle goes the broad dominant patent, and to him who has made the improvement goes the narrower patent covering his improvement. Additionally, the various inventors are assured that the broad and improvement patents are not in competitive and, therefore, antagonistic hands. This is especially important if the improvement is the practical embodiment of the broad idea. Were it not for the fact that the company holds both patents, the various inventors may find themselves in the position where the holder of the broad patent

will not be able to use the improvement vital to the practical success of the idea, while the owner of the improvement patent cannot use it without infringement of the broader patent. Some sort of agreement and some division of rewards between the basic and the improvement patentees is essential to the exploitation of the invention. In like manner the company apportions the rewards between him who has made the basic invention and him who has the practical concept, the use of which is desired.

The rewards as provided by the Patent Policy Plan are of fourfold nature. As suggested here, one is the prestige that comes from the origination of a useful and patentable invention which enables the company to profit from its use. Second, the plan provides that in addition to the one hundred dollars paid to the inventor on acceptance of the idea under the plan, the company may in such cases where it has profited by the invention, give a greater sum to the inventor. Thirdly, the plan provides that the company may license others under the

patent or sell the patent outright. The inventor will share equally with the company in the net profits thus obtained. Fourth, the inventor is saved the cost of patenting, which may prove to be an important consideration. The necessity of protecting the basic invention by improvement patents adds an additional burden. If the inventor should encounter difficulties necessitating appeals to the higher tribunals of the Patent Office, or to the courts, or must fight interferences with other inventors who may have filed applications for similar inventions, the cost of patenting may become prohibitive for the inventor of ordinary means. The Union Oil Company has resources to patent and exploit the invention and will give, in addition, considerable prestige to the negotiations leading to licensing or sale of the patent. The inventor will find that he will obtain considerably greater rewards as a result of this Patent Policy Plan than if he were to proceed with the patenting and exploitation of the invention on his own resources.

In Navajo Land

NORTH about a hundred miles from the railroads beyond the Little Colorado, in the opal and amethyst haze of the painted desert lies the land of the Hopi and Navajo. Near Chin Lee, Arizona—the most picturesque part of the Navajo Reservation, Carl Oscar Borg painted the picture “In Navajo Land” which appears on this month’s cover.

Mr. Borg first exhibited in Los Angeles twenty-one years ago, and has brought his work to this city many times since. His gallery of paintings form a complete record of his travels through France, Italy, Spain, Mexico, New Mexico, Arizona and California. According to Antony Anderson: “Borg has apparently been everywhere and seen everything, always armed with a paint

brush.” And after traveling the world over, he has found the American Indians, especially those of Arizona, among the most interesting subjects.

Mr. Borg’s fondness for the primitive Indian is explained by J. Nilsen Laurvik: “These glimpses of a fast-fading race and their sun-scorched mesas are imbued with that spirit of romance which Mr. Borg finds wherever he goes among these simple people, because in his heart is treasured the rich folk-lore of his childhood days in Sweden. His art is a mirror of himself, reflecting his predilections; with an unerring good sense he has had the wisdom to confine himself to what he understands best, and there in lies the secret of his success.”

News of the Month



CHANGES IN SALES ORGANIZATION

A. P. Bennett, formerly Special Agent, Alberta territory, has been promoted to the position of Assistant District Sales Manager, Vancouver territory, succeeding H. T. Langford, resigned.

J. Venus, formerly Special Agent of the Okanagan territory, Vancouver District, has been appointed Special Agent at Alberta, Canada, succeeding Mr. Bennett. R. W. Fieldhouse, formerly Agent at Calgary, succeeded Mr. Venus as Special Agent in the Okanagan territory.

NEW PRODUCTION

Four new wells were brought by the company during July, aggregating a daily initial yield of approximately 1,407 barrels of oil. Two of the new producers are on the Stern lease in Richfield, they being Nos. 4 and 8 with a daily average of 453 barrels and 385 barrels respectively. Thompson & Goodwin No. 9 came in with 329 barrels daily, and Boss No. 3 in the Valley is yielding 240 barrels a day.

PRIZE-WINNING FLOAT

First honors in the Fourth of July parade at Fort Collins, Colorado, were awarded to the company's entry, according to word received from C. H. Sherman. The float consisted of a small steel derrick erected on one of our two and one-half ton trucks. The derrick was rigged up as a pumping well with walking beam, bandwheel and gasoline engine, forming a vehicle for exhibiting Aristo Motor Oil and cup greases.

NEW BRITISH COLUMBIA STATION

A new distributing station at Cranbrook, B. C., was completed July 16th, which is being operated as a sub-station of Vancouver District. W. G. Brown has been appointed Agent in charge.

JUNE CRUDE PRODUCTION

The total production of crude oil in California for June amount to 19,181,442 barrels, an average of 639,381 barrels per day. This is an increase of 10,153 barrels per day over May production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 464,557 barrels. The total stocks at the end of the month were 145,783,205 barrels. The total stock increase for 1927, up to June 30th, was 171,029 barrels.

Ninety-six wells were completed during the month with an initial daily production of 64,201 barrels, compared with 80 wells completed during May with an initial production of 52,575 barrels.

Complete details of production and development by fields for June will be found on page 23.

NORTHERN STATIONS ENLARGED

Additional storage facilities to the amount of 37,500 barrels of tank fuel, 6,000 barrels of Diesol and 12,000 barrels of gasoline are being provided at the company's marine distributing plant at Hoquiam, Washington, under the supervision of the Engineering Department.

Construction of a new office building and warehouse, additions to the property and general repairs will soon be started at the water front station at Astoria, Oregon. This work is also under the supervision of the company's engineering forces.

CATTERMOLE RECEIVES NAVAL COMMISSION

H. E. Cattermole, Ship Dispatcher, has been commissioned Lieutenant in the United States Naval Reserve and assigned to duties with the Intelligence Bureau at the Los Angeles headquarters of the Naval Reserve. The commission was signed by Curtis D. Wilbur, Secretary of the Navy, in recognition of Mr. Cattermole's knowledge of, and contact with, general marine activities.

RE-ELECTED MEMBER OF MARINE BUREAU

William Groundwater, Manager of Transportation, was re-elected a member of the executive committee of the Marine Service Bureau at the annual meeting of that organization held in Los Angeles last month.

LECTURE COURSE ON PETROLEUM

Arrangements have been made by the Insurance and Personnel Division for a course in "Petroleum" for salesmen, service station operators and any others interested to be conducted by Dr. S. Fischer, Jr., Professor of Petroleum Technology in the University of California.

The course will consist of fifteen lectures, one each week, to be held in Room 724 Union Oil Building, Los Angeles. The opening date will be announced later.

Dr. Fischer has previously conducted other interesting and instructive courses for company employees, and undoubtedly the present one contemplated will be of value to those desirous of increasing their knowledge of the oil industry.

MARINE NEWS

The S. S. Los Angeles arrived at San Pedro July 22nd from Nome, Alaska, having been the second ship to call at that port this year. On arrival here she delivered the first consignment of U. S. Mail from Nome by boat since the harbor became ice-bound last winter. Twenty-five pounds of first class mail were turned over to the local postal authorities, the destination of a part of which is Juneau, Alaska.

The tankers La Purisima and Warwick went in for their regular semi-annual boiler-cleaning and repair period on August 1st.

A TESTIMONIAL

It is with pardonable pride that we reprint in part a letter received from D. P. Cushing, proprietor of the Cushing's Feed Store and Truck Service of Ontario, California, in which he outlines the gratifying results received from the use of Union Ethyl gasoline in the automotive equipment of his company. Mr. Cushing says:

"We find in our many hauls to Wilmington, San Pedro, Long Beach and other harbor cities, the round trip to which is approximately 130 miles, that we not only move our 10-ton trucks with greater ease, using Union Ethyl gasoline, but make a saving in fuel of nearly five gallons on each trip. Similar comparative savings are noted on our lighter trucks which we use in local deliveries.

We have been using Union Ethyl gasoline since its first appearance and are absolutely unable to find any objectionable features—and most heartily endorse Union Ethyl gasoline as a fuel giving greater power, increased mileage and a smoother running motor."

NEW REFINED OIL BARGE

Before a representative gathering, a 7,000-barrel steel barge, purchased by the company from the Los Angeles Shipbuilding and Drydock Company, was launched at the shipbuilding company's plant at San Pedro last month.

The new barge will be used in the handling of fuel oil and diesel deliveries in the local harbor, where increasing demands for our products necessitate increased equipment.

The new marine unit was named "Barge 1927" and was sponsored by Mrs. J. B. Arthur, wife of the Manager of Fuel Oil and Asphalt Sales.

With the commission of the new barge, the Union house fleet, comprising 13 steamships, 24 barges and motor boats will have a carrying capacity of over 975,000 barrels.

NEW STORAGE AT REFINERY

Plans have been approved and construction, under the supervision of the Engineering Department, is now under way on four 125,000-barrel steel tanks at the Los Angeles Refinery.

MORE FUEL FOR SOUTH AMERICA

Further evidence of the company's marketing activity in South America was presented when the tanker Cathwood cleared the local harbor with approximately 70,000 barrels of fuel oil on board with Rio de Janeiro and Pernambuco as the destinations.

Last month, the company made two tanker shipments to South American ports, and in order to fill contract requirements, the tanker Santa Maria will be engaged in the South America run for the balance of the year.

BARGE MAKES LIQUID ASPHALT DELIVERY

The recently commissioned barge Maltha, constructed specially to make liquid asphalt deliveries in the San Francisco Bay district, successfully made its first delivery last month, the first shipment of its kind to be handled by water equipment on the Pacific Coast. The delivery was in the nature of a trial trip and was witnessed by representatives of the sales, refinery and transportation departments.

BLOCKS HOLD-UP ATTEMPT

C. G. Myers, operator at the company's service station at Broadway and Roy Streets, Seattle, successfully blocked the attempt of three men to rob him of company money as he was riding home after closing his station. The bandits tried to force his automobile to the curb while one of them leaped on the running board of his automobile, but a well-directed blow knocked the would-be-thug to the paving.



AT THE "BARGE 1927" LAUNCHING

Left to right, upper row: M. W. McAfee, H. J. Romain, G. G. Blue, Mrs. Thos. Young, J. B. Arthur, Wm. Groundwater, Thos. J. Farley and S. D. Herkner. Lower row: Lawrence Wolff, Robert Wolff, J. M. Geary, E. S. Sharp, Mrs. J. B. Arthur (sponsor) and J. C. Rohlf.



NINTH ANNUAL TENNIS TOURNAMENT

Arrangements are being completed for the Ninth Annual Union Oil Company Tennis Tournament to be held the latter part of September, according to an announcement by G. G. Blue, Manager of Insurance and Personnel. Events will be similar to those held during past tournaments, the coveted prize being the President's cup, which was won last year by R. H. Hornidge.

Full particulars on the tournament will be published in next month's Bulletin.

LOS ANGELES HOOPSTERS ENTHUSIASTIC

W. H. Steele of the Comptroller's Office, who last year managed the first company championship basketball team in the Los Angeles Petroleum Athletic League, is all smiles these days as a result of the enthusiastic response of aspirants for places on the team for the coming season.

Steele anticipates an even stronger entry in the league than that which won the championship last year.

Arrangements have been made for the use of the Belmont High School gymnasium for practice games, the first of which is scheduled for the near future.

SAN JOSE ARISTO CLUB HOLDS OUTING

The San Jose Aristo Club held full sway at the Oak Dell Picnic Grounds on Sunday, July 17th, the event being the fourth annual picnic of this organization.

Details incidental to the affair were cared for by the officers of the club, and all present enjoyed a very lively and interesting day. A full program of games, races, etc., kept enthusiasm at the highest pitch, and there never was a dull moment. Those in attendance formed one of the most congenial groups ever gathered together by the San Jose District.

SOUTHERN DISTRICT GOLF LADDER

Owing to vacation season, the number of matches played during the month of June has not been as large as usual. Below is a list showing the first thirty-two players on the ladder as of August 1, 1927.

No. 1 Team	No. 1-A Team
1. Ronald Gibbs	9. T. J. Collins
2. S. D. Herkner	10. C. S. Morgan
3. L. I. Messinger	11. E. V. Manico
4. John T. Howell	12. H. C. Ferry
5. A. W. Koerber	13. W. L. Standard
6. M. F. Robertson	14. C. R. Erb
7. R. H. Hornidge	15. R. E. Haylett
8. A. Stanley Clarke	16. C. J. McKeever
No. 2 Team	No. 2-A Team
17. R. W. Martin	25. C. S. Lienesch
18. A. W. Anderson	26. J. B. Sparks
19. J. B. Arthur	27. C. R. McCollum
20. Gerald G. Blue	28. T. E. Purkiss
21. Earl Fields	29. E. T. Ragatz
22. John Potts	30. Lawrence Wolff
23. E. S. Fuller	31. C. W. Fritz
24. L. G. Metcalf	32. I. J. Hancock

ENGINEERS WIN

After a series of well-played and hotly contested tilts in which all teams were game to the last, the question of supremacy in the Orange Division Indoor Baseball League has finally been settled to the satisfaction of all parties.

Nothing succeeds like success. The Engineers, who, incidentally, received the Safety First pennant, again demonstrated that they are winners by copping this series in a brilliant manner. The other teams in order of their standing are Pipe Line, Richfield, Gas Division and Stearns.

INDOOR BASEBALL AT BREA

The company's indoor baseball team at Brea—newest entry in the Brea City league ranks, made an auspicious debut by blasting the hopes of the Olive Merchants 8 to 5 in a recent moonlight frolic at the Legion park.

PARS MOUNT SOLOMON



The above likeness is that of John Douglass, employed in the Coast Division as Gas Engine Repairman.

The big thing about John (outside of his stature) is the fact that he is the only golf player who has, up to this time, parred the difficult Mount Solomon Golf course. John is wondering if there are any golf players among the company employees who are able to duplicate his feat.

Safety in the Union

Edited by Geo. E. Prussing



Secretary, Safety Board

Helping the Other Fellow

No better way of preventing accidents, or increasing efficiency or, for that matter, making life more interesting, has been discovered than the art of taking an interest in the other fellow. Especially is the new man on the job in need of the friendly counsel of those older men who have had the benefit of experience. The new man is almost always afraid. To cover his timidity, his ignorance of new duties, his distrust of his own ability, the new man often puts on an armor of bluff that leads only to grief.

No man can help this new comer as easily as those who work with him. And never, in all his service, will he be as easily trained, as during those first few days before familiarity has bred contempt.

Isaiah Hale, in speaking before the four hundred employees at Compton a few months ago, turned suddenly toward the table where sat the superintendents and foremen and asked:

"How many of you heads of departments do you suppose there are in this country who have given instructions that they personally want to see every man who is hired to work under their jurisdiction? Who bring that young fellow into the private office and sit him down across from the table, who lean on their elbow and look him squarely in the eye and give him a kindly heart-to-heart talk for five minutes? Who tell him of the privileges and possibilities of the service he is just coming into? Who tell him of his obligations to give an honest day's work for an honest day's pay; of his obligations to the men with whom he is going to work?"

And the unspoken answer, if honest,

would have been—"mighty few!" Yet curiously enough it is those departments of our organization where every man from superintendent down takes an interest in the new men, that have the lowest accident rate and the highest morale.

A new man stands more chance of injury during his first six months than during the succeeding five years. If his foremen and fellow workers could get each new man through those first six months unhurt, the accident rate of this company would be cut to little or nothing.

Safety Flags

In a commendable effort to place the "Bulletin" on the newsstands before the date of publication, as is done by all popular magazines, the editor has called for our copy before the July standing in the safety flag contests is known. We wish, however, to correct an error that appeared in last month's data. It was the Producers Pipe Line that won the safety flag, not the Los Angeles Pipe Line. Due to a misunderstanding, the Safety Board was given the wrong list of casualties.

The Deadly Drop Light

While portable or drop lights are usually only used on 110 volt circuits, they are responsible every year for an alarming number of fatal accidents, due to shock or falls caused by shock. Only the best all rubber cable should be used for portable cords and these should be equipped with non-metallic plugs, sockets and lamp guards. Drop cords should be of "brewer's" cord or similar safe material. The common yellow and green drop cord equipped with brass shell sockets should *never* be used.

Tanker Code Referred to American Petroleum Institute

The recommended "Regulations for the Safe Loading and Discharge of Oil Tankers" which were coded by the Pacific Coast group of the American Petroleum Institute's general committee on fire prevention, have now been referred to the latter committee for adoption. Meanwhile the regulations have been put into practice by following companies on the Pacific Coast:

Associated Oil Company,
California Eastern Oil Company,
California Petroleum Corporation,
General Petroleum Corp. of California.
Pan-American Petroleum Company,
Richfield Oil Company of California.
Shell Company of California,
Standard Oil Company of California,
Union Oil Company of California.

To Prevent Fires

Talks on the cause and prevention of fires are being given by V. N. Dupuy of the Safety Board throughout the company's sales territory. During July, meetings were held at Riverside, Bakersfield, Fresno, Sacramento, Chico, Oakland, San Francisco, Napa, Ukiah, San Jose and San Luis Obispo, California and Reno, Nevada. During August Mr. Dupuy will be in the Northern Division.

Accidents Rank Second

Accidents cause more deaths among men between the ages of 20 and 45 in the United States than do any of the various well known diseases, excepting only tuberculosis. The automobile is the greatest single agent of accidental death.—From a review in the *National Safety News*, of Doctor L. I. Dublin's article "The Components of Death Curves."

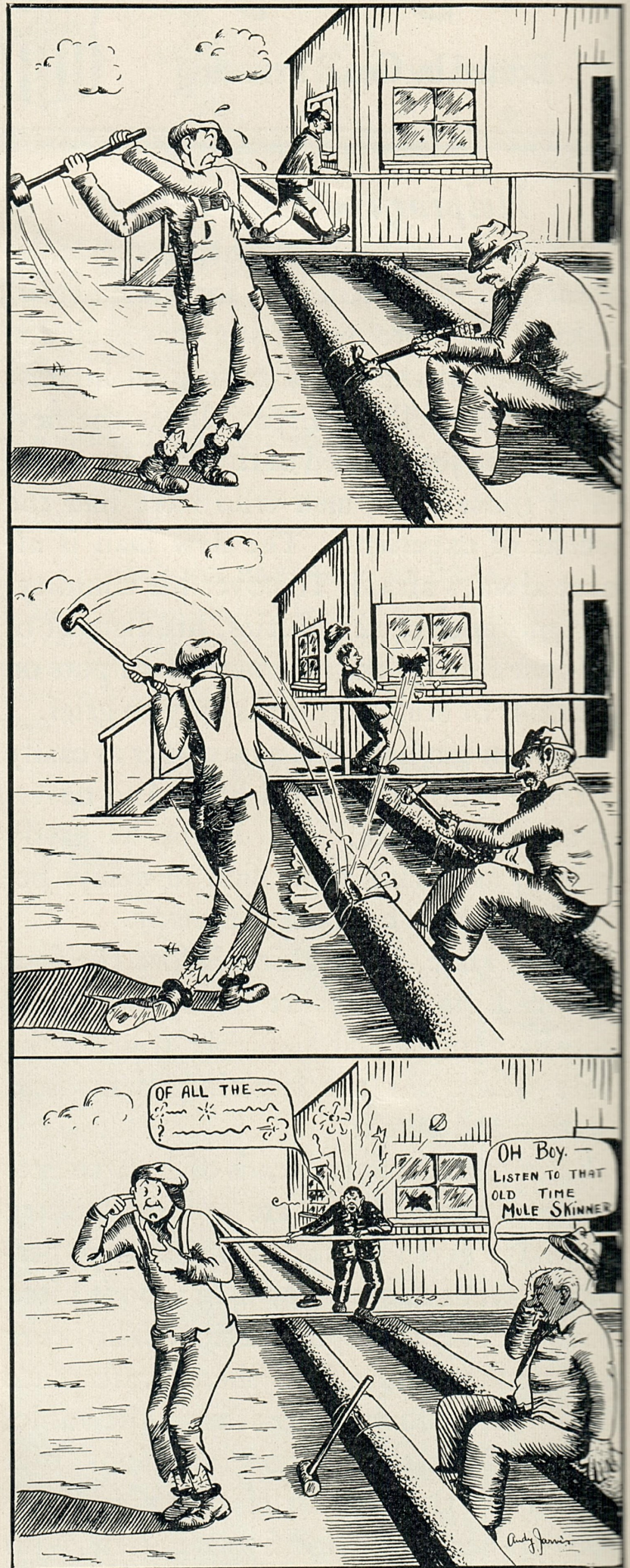
GENTLEMAN BILL

A London spinster was shocked at language used by workmen repairing telegraph wires close to her house. She wrote the company, and the foreman reported:

OLE & UM

—by ANDY JARVIS

They lay down a barrage.



Moral: The job is a poor place for a snooze.

"Me and Bill Fairweather were on this job, I was up the pole, and accidentally let the hot lead fall on Bill. It went down his neck. Then he said: 'You really must be more careful, Harry.'"—*London Daily Express*.

California Oil Statistics, June, 1927

Prepared by American Petroleum Institute, Pacific Coast Office

PRODUCTION

(Figures of production and stocks are in barrels of 42 Gals.)

DISTRICT	BARRELS PER MONTH		DAILY AVERAGE	
	June 1927	May, 1927	June, 1926	June, 1926
Kern River.....	469,917	15,664	14,065	11,719
Mount Poso.....	1,835	61	75	—
Round Mountain.....	5,400	180	19	—
McKittrick.....	155,847	5,195	5,082	5,358
Midway-Sunset.....	2,689,538	89,651	90,170	93,889
Elk Hills.....	750,365	25,012	24,843	35,152
Lost Hills-Belridge.....	113,918	3,797	3,826	4,715
Coalinga.....	595,264	19,842	20,068	20,510
Wheeler Ridge.....	31,167	1,039	1,025	1,062
Watsonville.....	1,725	58	57	57
Santa Maria.....	166,894	5,563	4,979	5,151
Summerland.....	4,215	141	135	129
Goleta.....	11,060	369	162	—
Ventura Avenue.....	1,124,917	37,497	40,581	40,248
Ventura-Newhall.....	178,787	5,960	6,075	6,372
Los Angeles-Salt Lake.....	53,483	1,783	1,744	1,799
Whittier.....	53,246	1,775	2,046	2,068
Fullerton (Brea-Olinda).....	507,081	16,903	15,851	17,150
Coyote.....	412,259	13,742	14,278	16,722
Santa Fe Springs.....	1,260,192	42,006	42,920	48,491
Montebello.....	455,786	15,193	15,362	18,420
Richfield.....	659,653	21,988	21,183	14,070
Huntington Beach.....	2,194,400	73,147	76,928	43,397
Long Beach.....	2,803,829	93,461	92,093	106,433
Torrance.....	700,283	23,343	23,825	29,102
Dominguez.....	477,430	15,914	16,385	20,536
Rosecrans.....	280,510	9,350	10,188	16,868
Inglewood.....	1,031,140	34,371	35,837	49,479
Newport.....	1,164	39	47	83
Seal Beach.....	1,990,137	66,338	49,372	—
TOTAL.....	19,181,442	639,381	629,228	608,981
May.....	19,506,054	629,228		
Increase.....	324,612*	10,153		

	STOCKS		June Stock	
	June 30, 1927	May 31, 1927	Decreases	June 30, 1926
Heavy Crude, heavier than 20° A. P. I., including all grades of fuel.....	91,878,389	91,695,285	*183,104	89,074,507
Refinable Crude, 20° A. P. I., and lighter.....	27,175,071	27,365,926	190,855	35,340,238
Gasoline.....	13,496,541	13,602,175	105,634	10,766,007
Naphtha Distillates.....	3,517,038	3,659,951	142,913	5,213,043
All Other Stocks.....	9,716,166	9,924,425	208,259	10,120,565
TOTAL ALL STOCKS.....	145,783,205	146,247,762	464,557	150,514,360

	DEVELOPMENT			Daily Initial Output	Active Producing	Abandoned Wells	
	New Rigs Up	Active Drilling	Completed			Drillers	Producers
Kern River.....	12	16	6	990	1,300	..	..
Mount Poso.....	..	..	..	..	2	1	..
Round Mountain.....	1	1	..	..	1	..	..
McKittrick.....	..	..	..	..	309	..	..
Midway-Sunset.....	4	11	7	2,019	2,987	1	2
Elk Hills.....	..	..	..	..	231	..	..
Lost Hills-Belridge.....	..	2	..	..	238	..	..
Coalinga.....	1	4	1	12	973	..	..
Wheeler Ridge.....	..	1	..	..	28	..	..
Watsonville.....	..	..	..	..	6	..	..
Santa Maria.....	..	3	1	550	215	..	..
Summerland.....	..	2	..	..	92	..	..
Goleta.....	4	5	1	550	3	..	..
Ventura Avenue.....	3	19	2	1,995	76	..	..
Ventura-Newhall.....	1	34	1	10	504	4	..
Los Angeles-Salt Lake.....	..	..	..	..	341	..	3
Whittier.....	..	..	..	..	184	..	..
Fullerton (Brea-Olinda).....	1	8	3	1,429	380	..	..
Coyote.....	5	5	..	..	211	1	..
Santa Fe Springs.....	..	1	..	..	334	..	1
Montebello.....	1	2	3	780	184	..	..
Richfield.....	10	23	11	2,796	234	..	2
Huntington Beach.....	18	36	10	4,324	549	1	..
Long Beach.....	1	17	4	3,782	679	2	9
Torrance.....	1	2	1	150	655	..	..
Dominguez.....	..	2	1	250	77	2	..
Rosecrans.....	..	1	..	..	118	2	1
Inglewood.....	1	..	2	515	220	..	..
Seal Beach.....	10	69	42	44,049	100	2	..
Newport.....	..	2	..	..	9	..	..
Miscellaneous Drilling.....	5	130	..	..	..	10	..
June.....	79	396	96	64,201	11,240	26	18
May.....	50	444	80	52,575	11,191	19	13
Increase.....	29	48**	16	11,626	49	7	5
Average for year 1926.....	95	422	76	32,635	11,288	24	17
Average for year 1925.....	105	417	79	42,247	11,393	28	12
Average for year 1924.....	103	510	103	42,412	10,903	28	21
Average for year 1923.....	111	759	82	114,690	8,928	24	..
Average for year 1922.....	115	605	67	43,700	9,410	17	..

**Decrease

Refined and Crude



"Chief," asked a visitor in Fort Mink, "can you tellum where I buy some of those Indian beadwork?"

"I got mine from a mail-order house in Rochester, New York."

* * *

"Billy, do you know what happens to little boys who tell lies?"

"Sure, they ride for half-fare."

* * *

Mrs. Newlywed (indignantly): "I've told you to keep out of the kitchen, Dick. Now see what you've done—knocked down my cookery book and lost my page, and I have not the faintest idea what I was cooking!"

* * *

Bride: "He's awful, mother! He doesn't believe in bridge, dancing, or any amusement."

Mother: "But you must remember, dear, you took him for better or for worse."

"Yes, but it would be so much better if he were worse."

* * *

First Tramp (reading an old newspaper): "Here's a story about a cove who did no work for thirty years."

Second Tramp (wearily): "Oh, don't talk shop."

* * *

Badly bruised boxer: "I can't 'ardly see 'im, now."

Second: "Never mind, 'it 'im from memory!"

Tommy, who had no great love for soap and water, was observed by his mother washing the forefinger of his right hand. "What's the idea of washing only one finger?" she inquired.

"The boy next door has asked me to come over and feel his baby sister's new tooth," explained Tommy.

* * *

An African explorer says that elephants never die a natural death. It appears that pachyderms have much in common with pedestrians.

* * *

Old Man: "Are you sure you can give my daughter the luxuries to which she is accustomed?"

Suitor: "I ought to; I'm the one who accustomed her to them."

* * *

The Track Supervisor received the following note from one of his track foremen: "I'm sending in the accident report on Casey's foot when he struck it with the spike maul. Now under 'Remarks,' do you want mine or do you want Casey's?"

* * *

The optimist believes that something is sure to turn up; so does the pessimist—his toes.

* * *

"You were going forty miles an hour," said the policeman, reproachfully.

"I'm no deliberate lawbreaker," said Mr. Chuggins. "I'm ashamed of myself, but I'm kind o' proud of the old fliv."

Sequoia

*Jungles have smothered the Mayan fanes
And sands have covered the Pharaoh's tombs,
But, king of the forests' wide domains,
The living giant of ages looms.*

*Centuries flow thru its mighty frame,
Its yesterdays more than its verdant leaves;
It lived ere the Star of Bethlehem came
Or Ruth gleaned after her kinsman's sheaves.*

*Cæsar's legions, Napoleon's hosts,
Crusader, Saracen, fool and sage,
Time's long pageant, its mem'ries and ghosts
The giant has reviewed, age after age.*

*Babylon lies 'neath ashes and rue,
Atlantis is sunk in ocean's gloom;
The giant still reaches for Heaven's blue
As its branches 'gainst the skyline loom.*

—H. S. Botsford.

