THE EVOLUTION OF OIL

HOW THE OILCAN RULES THE GREATEST ENGINE.

By J. F. St. B. Barclay.

Nature's handiwork, which is ever before us, is a constant source of wonder and admiration to all. From the humble diligence of the common spider to the roaring might of the greatest waterfall the works of Nature are a living triumph of perfect craftsmanship and harmonious execution. And yet, man being one of Nature's children, his works, though puny in comparison, are no less deserving of praise and admiration. Especially to-day is this true, when the age in which we live is a chemical and mechanical one.

But how many people as they travel swiftly by land, sea and air through the might of powerful engines, as they watch great tree trunks thrust into one end of a machine emerge at the other in a smooth sheet of paper as they do their manufacturing, calculating and almost their thinking by machinery—how many do not view it all as a matter of course, and realise the might of man's achievement?

Consider the case of a small drop of oil. If a vegetable oil, it is generally the object of ailing infants' violent abuse; if a mineral oil the object of greater abuse from perspiring motorists and their valets. And yet without the aid of this lugubrious greasy substance the mighty engines which carry us by land, sea and air which make food for us, clothing and all the necessities and luxuries of life—all would be as powerless as a giant in chains!

The purpose of oil is to keep rolling or sliding surfaces apart. Under a microscope the finest bearing surface in the best-made machine will seem a field of hills and valleys. And should two such surfaces be required to move upon each other when dry, the hills will be worn down, heat will be generated, the metal will wear, expand, seize, the motion stop and the bearings be burned. But if some lubricant, such as water, oil, graphite or soapstone be placed between the moving surfaces, it will fill up the "valleys" and keep the "hills" from being worn down. Thus it will be seen that the lubricant must be of the right consistency, for a too-thin lubricant will not prevent wear, and a too-thick one will retard the motion, acting as a brake.

Side by side, therefore, with the development of machinery has grown up the evolution of lubrication. The earliest machines used the earliest lubricants, which were oils and fats extracted from animal and vegetable matter. The most common lubricant was tallow, which was melted in a teapot set on a steam chest and occasionally poured into the chest. Hard tallow was packed in the heavier bearings and mixed with red lead to lubricate the gears. Sperm oil, from the sperm-whale was another lubricant, chiefly used in light machinery, as were castor oil, olive and lard oil. The advantages of the last three were that they were not only useful as lubricant but also as illuminants—to say nothing of their culinary use in frying fish, and, where the first is concerned, for curing disorders of the stomach.

The method of applying these early oils was distinctly crude, for the engineer simply poured some in when he felt like it, or when the engine got hot and began to protest. When progress was made, and cup orders or bath bearings were introduced, then the shortcomings of these organic oils as lubricants were manifest. For all animal and vegetable oils are subject to oxidisation, and when this took place fatty acids and fumes were produced, which attacked the metal retarded the motion, and stopped up the oil passages, thus provoking overheating.

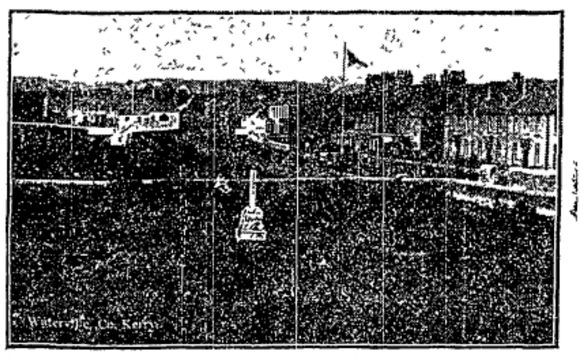
And so in the first few years of the nineteenth century, knowledge of lubricants had reached its limit, and although refining processes were improved from time to time, no real progress was made until the year 1880. In this year came the introduction of American mineral oils. There were, of course, early difficulties. One was that bearings formerly lubricated with vegetable and animal oils, absorbed a certain amount of fatty acid, and on application of mineral oils the combination produced clogging gums and varnishes. But this difficulty was solved by gradually mixing the oils, so that the gums were absorbed by degrees. There was another difficulty, too—of a psychological nature. German engineers on the Rhine just tasted one piece of fish fried with American oil—and then hurried back to lard lubricants. Similarly Italian mill operators did not relish their salads dressed with the new oil, nor did the ones from Bombay. Gradually, however these people were induced to forego their doubtful delicacies, and the mineral oil was established once and for all.

It is, of course, due to the chemists that mineral oils ever came into use, and have now reached an advanced stage of perfection. But it took many years of arduous research before that stage was reached. One of the greatest problems confronting the chemist was how to eliminate carbon residue in the oil. This is now effected by the distillation of the oil under a high vacuum. Here the crude oil is subjected to a fairly low degree of heat until it is freed from burnt or decomposed particles.

Contamination of the lubricant has also proved a stumbling block. When oils are run on a bearing, and then run through the engine and out, there is no contamination to speak of, but when they are stored in the lubricating system and used over and over again, then contamination results. This is generally due to water leaking into the oiling system, by which a sticky emulsion is formed. And incidentally the formation of this emulsion proves the error of the old saying that oil and water will not mix. When they work together in a circulating system, they not only mix but sometimes will never separate. Contamination in petrol engines is also formed by leakage of petrol into the oiling system. The perfect lubrication of petrol engines is still a thing of the future and every motor-car to-day in spite of its highly complicated system of oiling, is lubricated with a mixture of oil, fuel water and dirt that would not be used on the bearings of the most primitive farm machine.

With the present tremendous use of petroleum for fuel and oils the day is not far off when we will be forced to find a substitute. The ever watchful chemist is already working hard to find a substitute. It may be that he will find it in shale deposits or in coal tar—quite likely in the most unlikely substance. One thing is certain,—when civilisation looks to the chemist in its hour of need it will not be disappointed.

WATERVILLE, CO. KERRY.



Where an inspection will shortly be made by the Irish Sailors and Soldiers' Land and Housing Trust with the view to erecting houses for British ex-Servicemen

O'CONNELL AND BIDDY MORIARTY.

(From "The Freeman").

Shortly after Daniel O'Connell was called to the Bar he laid a wager that he would silence a celebrated Dublin termagant, named Biddy Moriarty.

The party adjourned to the huxter's stall, and there was the owner herself superintending the sale of her small wares—a few loungers and tagged idlers were hanging around her stall—for Biddy was "a character," and, in her way, was one of the sights of Dublin.

O'Connell was very confident of success. He had laid an ingenious plan for overcoming her, and, with all the anxiety of an ardent experimentalist, wanted to put it into practice. He resolved to open the attack. At this time O'Connell's own party, and the loungers about the place, formed an audience quite sufficient to rouse Mrs. Moriarty, on public provocation, to a due exhibition of her powers. O'Connell commenced the attack:—

"What', the price of thy walking-stick, Mrs. What-cum-Name?"

"Moriarty, sir, is my name, and a good one it is, and what have you to say agen it? and one-and-sixpence' the price of the stick. Truth, it's cheap as dirt—so it is."

"One-and-sixpence for a walking-stick, whew! why you are no better than an imposter, to ask eighteenpence for what cost you twopence."

"I'm opence your grandmother," replied Miss Biddy, do you mane to say that it's chating the people I am—imposter, indeed?"

"Ay, imposter and it's that I call you to your teeth," rejoined O'Connell.

"Come, cut you stick, you cantankerous jackanapes."

"Keep a civil tongue in your head, you old diagonal," cried O'Connell calmly.

"Stop your jaw, you pug-nosed badger, or by this and that," cried Mrs. Moriarty, "I'll make you go quicker nor you came."

"Don't be in a passion, my old radius—anger will only wrinkle your beauty."

"By the hokey, if you say another word of impudence, I'll tan your dirty hide, you bastely, common scrub; and sure I'd go to spoil my fists upon your carcass."

"When! boys, what a passion old Biddy is in. I protest, as I'm a gentleman——."

"Jintleman! jintleman! the likes of you a jintleman! Wisha, by gor, that bangs Banagher. Why you potato-faced pappoose-sneezer when did a Madagascar monkey like you pick enough of common Christian decency to hide your Kerry brogue?"

"Easy now—easy now," cried O'Connell, with imperturbable good humour, "don't choke yourself with fine language, you old whiskey-drinking parallelogram."

"What's that you call me, you murderin' villain?" roared Mrs. Moriarty, stung with fury.

"I call you," answered O'Connell "a parallelogram and a Dublin judge and pity will say that it is no lie to call you so."

"Oh, tare-an-ouns! oh holy Biddy—that an honest woman like me should be called a parrybellygram, to her face! I'm none of your parrybellygrams you rascally gallowsbird, you cowardly sneaking, plate-licking bloggard!"

"Oh, not you, indeed!" retorted O'Connell, "why, I suppose you'll deny that you keep a hypothenuse in your house?"

"It's a lie for you, you b——y robber, I never had such a thing in my house, you swindling thief."

"Why, sure all your neighbours know that you keep not only a hypothenuse but that you have two diameters locked up in your garret, and that you go out to walk with them every Sunday, you heartless old heptagon."

"Oh, hear that, ye saints in glory! Oh! there's bad language from a fellow that wants to pass for a jintleman. May the divil fly away with you, you mother from Munster, and make celery-sauce of your rotten limbs, you mealy-mouthed tub of guts.

"Ah, you can't deny the charge, you miserable submultiple of a duplicate ratio."

"Go rinse your mouth in the Liffey, you nasty tickle-pitcher, after all the bad words you speak it ought to be filthier than your face, you dirty chicken of Beelzebub.

"Rinse your mouth, you wicked-minded old polygon—by the deuce I pitch you, you blustering intersection of a filthy superfluous."

"You saucy baker's apprentice, if you don't cease your jaw I'll——" But here she gasped for breath, unable to hawk up any more words, for the last volley of O'Connell had nearly knocked the wind out of her.

"While I have a tongue I'll abuse you, you most immitable periphery. Look at her, boys! there she stands—a convicted perpendicular in petticoats! There's contamination in her circumference, and she trembles with guilt down to the extremities of her corollaries. Ah! you're found out you rectilineal antecedent and equiangular old hag! 'Tis with you the divil will fly away, you porter-swipping similitude of the bisection of a vortex."

Overwhelmed with this torrent of language, Mrs. Moriarty was silenced. Catching up a saucepan, she was aiming at O'Connell's head, when he very prudently made a timely retreat.

"You have won the wager, O'Connell, here' your bet" said the gentleman who proposed the contest.

BORN NEAR BALLYBUNION

NINETY YEARS AGO.

DEATH OF MR. RICHARD WOULFE IN U.S.A.

OLD TIMES RECALLED.

NOTAELE PERFORMANCE OF RACEHORSE

ON KERRY STRAND.

Mr. Richard Woulfe, born near Ballybunion about ninety years ago, died recently near Streator, Illinois, where he was a very large farmer and breeder of horses. He emigrated eighty years ago amongst a colony of his relatives, who prospered on the land in Illinois and Iowa. His father, Richard Woulfe, and his mother, Mary Foley, emigrated at the same time, and settled at La Salle, Illinois. Deceased and his wife, nee Kate Maher, who survives him, celebrated the golden jubilee of their marriage in 1921. The widow was a second and third cousin of her late husband. She is a daughter of Batt Maher, who emigrated from Tiveneragh, and on her mother's side she is a grand-daughter of Maurice Woulfe, who emigrated from Knocknanaig after he had made a lasting reputation as owner of Dimby, a racehorse whose name is still fresh in the traditions of the once famous Ballyeigh racecourse.

Dimby was bred by William the Fourth, King of England. In the possession of Maurice Woulfe, his most notable performance was the winning of a challenge at the then goodly sum of one hundred pounds aside. The match was decided at Ballyeigh in or about 1840. The defeated horse was Roller, owned by a Mr. Gunn, a connection of the Roches of Athea. Dimby became the sire of The Rambler, also owned by Maurice Woulfe, and a good winner in the forties of last century. But it was, perhaps, the best of Dimby's progeny that met a fatal misadventure and died without being tested on a racecourse. It was from the dam of May Morning, Victory and Tally-Ho, and was bred by "Johnny Connell, of Rathmorrell," whose memory as a sportsman is still so affectionately treasured in Kerry and Limerick.

The colony of relatives who emigrated at or about the same time as deceased, included Maurice Woulfe, owner of Dimby. Maurice's descendants are numerous and wealthy in Illinois. There his son, Richard, once kept a high-class stud of Norman horses. They were a French breed of strong, clean and active horses, famous for all round utility. Later the family moved the stud to Texas with ambitious schemes to improve the breed of horses there; but the enterprise ended in failure and loss. The colony of relatives also included Batt Maher and Richard Woulfe, from Tiveneragh, and five families of the Woulfes from Tanavalla. They also have numerous and wealthy descendants in Illinois and Iowa, the majority being still farmers, who held to the land unlike so many more of the Irish, who sold their land to the Germans and crowded into towns. Amongst the best known members of the family was Judge Patrick B. Woulfe, who died at Clinton, Iowa, not very long ago. He had been a member of the Iowa State Senate. He was first cousin of the late Mr. Batt Maher, of Tiveneragh, of the late Mr. "Mike" Nolan, of Moyvane, and of the late Mr. Maurice Woulfe, of Kilteean. The Judge's son, Mr. John Woulfe, is a prominent lawyer at Clinton, Iowa. He was elected as a member of the Iowa State Legislature while he was a student of the University of Berlin, Germany. Another of much prominence is Mr. Edmund Maurice Woulfe, native of Clinton County, Iowa and practising as a lawyer at Boise, Idaho. His nearest relatives in Kerry would probably include Mr. O'Sullivan, of Tiren, Kilmoina; Mrs. Patk. Mangan, of Bedford, Listowel, etc. Mr. Richard Woulfe, of De Witt, is amongst the best known members of the legal profession in the State of Iowa.

Occasionally some American born members of the colony have come to Listowel to look up their parents' old homes, or their relatives, and they have appreciated the guidance of the late Mr. Gerald McElligott, whose memory extended to the days of Dimby.

HEAVY SEAS RUNNING.

TRALEE STEAMERS DELAYED.

Tralee, Monday.

The ss. Kerrymore, which discharged a cargo of coals for Messrs. McCowen's, Ltd., Tralee, at Fenit on Saturday evening, had to remain there for shelter owing to the heavy seas running. The ss. Causeway, with a cargo of coals for the same firm, which was due at Fenit yesterday has not yet arrived. Her delay is also attributed to the heavy seas running.

THE LEPINE CLAIMS CASE.

Judgment was reserved on Friday by Mr. Justice Romer in the Chancery Division London in the petition of right against the Crown to recover possession of the fortune left by Maria Lepine who died in June in 1798. The amount at stake is £45,000 with 129 years' interest.

OUR AMERICAN LETTER.

By William Parkinson.

New York, Nov. 25.

All gunmen charged with killing are sure of acquittal in Chicago. In a case just disposed of the jury, obtained after a month devoted to the examination, of more than 1,000 veniremen, returned a verdict of "not guilty" in the case of a gangster who killed a member of a rival gang, although eight witnesses testified the shooting. During the trial the witnesses were notified they would be killed if they testified for the State. One witness told the man who warned him that he was afraid of no gang. His home was wrecked by a bomb. The jurors admitted they would be marking themselves and their families for bombs if they convicted the gangster.

The city of Buffalo, N.Y., holds the dubious honor of having yielded up the largest alcohol distilling plant ever seized in the United States. Its value is set at 2,500,000 dollars. Apparently the plant had been in operation for a long time. Five vats held 60,000 gallons of fermented molasses, from which alcohol valued at 120,000 dollars could be made. According to the prohibition agents, who made the seizure, the output of the plant was about 5,000 gallons a day, and they estimated the net profits on a week's operation, at 100,000 dollars. An elaborate signal system protected the plant, and when the agents entered the operatives had fled.

Some women might be satisfied to spend ten dollars a year on perfume and cosmetics, but Mrs. Tillie Leopold, according to her alimony pleas in the Supreme Court here, must not be cramped within 2,500 dollars yearly for these items. Mrs. Leopold is 31, and to support herself in the style to which she became accustomed while her husband, Joseph, 63, was lavishing his wealth on her, she must not only have 2,500 a year for the items mentioned, but must have other funds in proportion, she contends. In suing for separation, on the grounds of incompatibility, she estimates that 2,000 weekly, or about 100,000 annually, is what she needs. This, she swears, will enable her to maintain her usual expenditures, such as 6,000 for furs, 2,000 for hats, 2,500 for shoes, 1,800 for stockings, 1,500 for gloves and handkerchiefs, and so on, down the line of what a woman needs. Giving evidence, Mrs. Leopold admitted she received a 100,000 dollar trust fund from her husband thirty-four days before she brought the separation action. As a daughter of poor parents Mrs. Leopold appears to be doing nicely.

You can get a mechanical substitute for almost every office worker in your employ, from efficiency expert to stenographer, exhibits at the National Business Show at Chicago reveal. One of the startling innovations is the mechanical efficiency system, which, with a human helper, can administer production for one, or forty, factories. Here is also a machine that hourly will produce 4,000 letters which appear to have been typed and signed by hand. Another machine, hourly, will produce similar letters to 1,000 persons, in which personal remarks have been inserted. This machine works like a player piano, and one operator can keep twelve typewriters going simultaneously by electric power.

The announcement that Ruth Elder has signed a 200,000 dollar vaudeville contract is important for the double reason that it reveals the cash value (excluding news rights) of having been the first woman to fly from America to the Azores, and that it enables those who didn't make such a flight to feel cheerfully superior about persons who "commercialize stunt flying." Yet "commercialization" is a complex phenomenon, as everything, including religion, is commercialized in this country at present. It is recalled that when an attempt was being made to dissuade Ruth Elder from the flight her response was "Well, I've lived a while without amounting to a plugged nickel. I want to do something that will make people notice me. If I don't, it won't make any difference anyway." Surely this showed a desire for notoriety.

Announcing that there are now 126 prisoners serving life terms in Sing Sing, Warden Lawes revealed that in a little more than the sixteen months the Baumes laws have been in effect forty-nine prisoners, on fourth convictions have entered the institution to serve life terms. The life prisoners are classified into three groups. There are twenty-four who were spared from the electric chair; eighteen who were sentenced as professional criminals, and 51 whose sentences were for twenty years to life. Out of 1,600 inmates in Sing Sing, the "lifers" now number nearly 8 per cent. of the prison's population.

Nearly thirty of the large life and accident insurance companies of the country have agreed to issue policies protecting airplane pilots and passengers, a move regarded as one of the most important in the history of aviation. The policies will cover "those riding on a regular air transport line on a regular schedule between established air ports by licensed aircraft in charge of licensed pilots." One company has been writing such insurance for some time, issuing tickets, providing 5,000 dollars' benefits in case of accident, for five dollars.

Up to date the War Department has awarded 1,256,555 Victory medals for service in the World War. The total number of medals issued by the Government for various campaigns is as follows:—Civil War campaign, 164; Indian campaign 1,963; Spanish War, 18,294; Philippine campaign, 32,958; Cuban occupation, 3,996; Porto Rican occupation 321; China campaign 1,655, Cuban pacification, 6,840; Mexican service, 16,419, Mexican Border service, 36,518 and Victory medal, 1,256,555.

BREVITIES.—The famous Nassak diamond, the property of the Duke of Westminster, has found a purchaser here for 480,000 dollars. The stone weighs over seventy-eight carats and has a romantic history attached to it.

The British £1 sterling has reached its highest point since 1914, having passed its par value. It is now 47.34 par value being 46.66.

A 33,000-ton airplane carrier, costing 40,000,000 dollars has been added to the US Navy. It has accommodation for 83 planes and is capable of crossing the Atlantic in four days, its builders say.

The resources in National Bank on October 10, when a tabulation was made, aggregated 27,213,624,000 dollars, the largest amount ever reported to the Comptroller of the Currency.

Hunters of the Museum of Natural History here are back from Alaska with two giant black bears. One weighs 1,200 pounds and measures 10 ft. 8 ins. when he stands on his haunches.

The reading on the barograph of Capt. H. C. Gray of US Army, who lost his life in an attempt to make an altitude record shows that he reached a height of 42,700 feet—the highest point ever reached by man—the War Department announces.

The US Shipping Board reports that nearly three-fourths of the country's sea trade was carried on alien vessels in 1926. The freight bill paid to foreign lines amounted to 180,000,000 dollars. A total of 5,761 vessels were used while only 1,268 flew the American flag, the Board's first foreign commerce analysis shows.

HEALTH CHAT

By a LONDON PHYSICIAN.

A Habit Of Thought

If you are going to acquire a habit of thought, mind it is a good thought. I find that many patients are the victims of incorrect habits of thought. A man hurts his knee; it is very painful to walk on, he rests and has another try at the end of a week and again it is very painful. By this time he is frightened and scarcely dare walk on the knee for fear that that wretched pain will return. Another week goes by and he walks with a stick; he manages to get back to the office, and everyone he sees remarks on the stick and insists on a minute account of the trouble. By the time the poor man has repeated the story for the hundred and fiftieth time, he begins to fill his whole mental horizon with pictures of an inflamed knee. He thinks knee, he dreams knee, he chews the cud over his knee, he reads medical books on knees; he listens to stories about men who have been crippled for life by an injury to the knee, every night his darling wife sheds tears which drop with a loud splash on his poor knee; everyone else wants to tell him about their own bad knees; life is simply one dash knee after another.

Mind Over Matter.

By this time he has acquired a habit of thought. In very truth there is nothing wrong with the knee, it was cured long ago, but the thought remains. The doctor says in a quiet voice that the knee is all right now and bids him good-bye, but that does not convince the patient; his thought remains. It takes something dramatic to shake him out of his mistaken idea. He hears of a witch who is the seventh child of a seventh child and who has marvellous powers. He decides to pay her a visit, and she rubs his knee with a cat skin, taken from a kitten that was the seventh kitten of a seventh kitten, and, believe me or believe me not, the man walks home as right as a trivet. Or he drinks some water from a well that was discovered by Edward the Confessor and has had miraculous powers for centuries.

Faith Healing.

Sometimes a brass band helps: the healer comes into the town to the tune of "See the Conquering Hero Come"; he rushes at the man with the stick, and with a dramatic gesture breaks it across his knee and throws it over the hedge; he then orders the patient to fall in and march alongside, which he promptly does, without any trace of limp. I think brass band ought to be at the command of every doctor. It is a mistake for medical men to say that brass bands are not scientific, that there were no brass bands in the pathological laboratories in the hospital, and that books on Materia Medica contain no reference to trombones. I am all for coming down to the patient's mental level, and if the disturbing thought can be removed by the seventh child of a seventh child playing on a trombone soon, it is the doctor's duty to apply the remedy. I, dear reader, would never allow ourselves to become the victims of a mistaken idea, with one impatient gesture we should cast the thought from us by a simple momentary effort of our majestic will.

Too Many Drugs.

There is too much drug taking by you ladies, you think that all you have to do when you have a headache is to take a couple of tablets and all is well. You seem to take these headache tablets as though they were acid drops or some harmless sweet. Most of these headache powders and tablets are poisonous, and they ought not to be taken without care and thought. Probably there is a good cause for the headache. You may need spectacles only you are too vain of your personal appearance to wear them. Most of you go to bed too late and rob your brains of their just amount of sleep. You all drink too much tea, which has a constipating effect, and your headaches are the result of the accumulation of poisons in your body which ought to be eliminated.

TO EAT IS TO SUFFER

Yet you must eat to live. What a dreadful problem faces all sufferers from indigestion. No wonder they wear such happy smiles and radiate such optimism when they have found relief by taking "Antigesta." For "Antigesta" brings hope to those who felt hopeless, and with the nightmare of suffering banished the world seems a fine place indeed.

If you dread meal-time; if you fear bed-time; if that gnawing pain is making your days and your nights miserable, then try "Antigesta." One small tin is quite sufficient to show how easily "Antigesta" can remedy your trouble.

Sold by chemists in tins at 2/3, 3/6, and 6/6. Get a tin to-day.

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