

## The Passing of Coal

During the past few weeks the public has been dramatically reminded of the great importance of coal in our modern industrial life, says the London Daily Telegraph. The writer has often been asked whether one result of the labor troubles and the increase of prices which must almost certainly follow will be that the demand for coal will become less because of new inventions. It is undoubtedly a fact that the whole problem of replacing coal by other sources of motive power has been very much in minds of scientists during the last two or three decades. After the signal triumph of the aeroplane (which many practical men at one time said was impossible) it would be foolish to give a negative answer. One of the most remarkable developments of the last quarter of a century has been the adoption of oil for motive power purposes. Engineering and economics are two subjects so closely allied that it is inevitable that the result of the labor troubles will be to stimulate inventions which have as an object the better utilization of the latest energy of coal and the development of substitutes for it.

From the engineer's point of view all substitutes for coal that can be usefully employed for the production of heat by combustion are of value, although, of course, only those which can be obtained in quantities at moderate prices can be considered commercially. Moreover, in general, it is necessary that the fuel should ignite at a fairly low initial temperature and burn with rapidity. The elementary substances which are important for this purpose are hydrogen and carbon, and practically all the fuels used contain these elements in different proportions.

Wood contains about 40 per cent of carbon and anything from 20 to 50 per cent of water. It is a flaming fuel, and is, therefore, well suited for use with larger heating surfaces. Owing to the great amount of water present, however, it is not possible to obtain high temperatures by direct combustion; and consequently wood is not very much used for industrial purposes. It has been applied for steam-raising in tropical countries, but its use in temperate zones is negligible. In an intermediate stage, between wood and coal, we have peat. This term includes a number of substances of unequal heating values. There is usually with peat incombustible matter—often sand—which is mechanically mixed with it. The great objection to its use is its bulk. For equal evaporative effect it is from eight to eighteen times that of coal. There are large quantities of peat fuel in Ireland, Scotland, Wales, Canada, and in Germany, but a comparatively small quantity of it is used for any other purpose than for cottage fires. Many efforts have been made to increase the density of the raw peat by compression, but up to the present this fuel has not been considered in this country as a commercial substitute for coal.

For a long time the use of petroleum as fuel was recognized as a thing possible, but the irregularity of the supplies prevented it from coming into commercial use until quite recently. Somewhere about 1898 discoveries of oil were made of the utmost importance. It was shown by chemical composition to be suitable for fuel purposes. These discoveries were made in Borneo and Texas, but the latter oil became difficult to obtain, because water flooded the wells. It should be mentioned that oil suitable for fuel has also been found in Mexico. The use of liquid fuel has during the last decade spread greatly in the Far East, probably because of the enterprise of certain Englishmen who have developed the Borneo oilfields. Naturally, with the increased demand for liquid fuel there came an increase of the price. Despite the fact that we have in this country the finest coalfields of the world, the Great Eastern Railway Company and the London, Brighton and South Coast Railway fitted some of their locomotives to be used with oil fuel, but the rise in prices led to the abandonment of the use of oil, although the burners are still fitted to the Great Eastern express locomotives. For the same reason the cement manufacturers gave up the use of oil fuel. It will be interesting to see if they revert to the practice during the next few weeks.

The Admiralty do not have to consider so carefully the question of running costs, and consequently the use of liquid fuel at sea has extended greatly. Unfortunately, the only sources of supply in the Empire seem to be in Burmah and Trinidad.

Although oil has been used as a substitute for coal for steam-raising purposes, it is chiefly in connection with oil engines that the economies have been made. During the next few weeks we shall hear a great deal about oil engines, as Dr. Diesel is shortly to read a paper on the engine named after him before the Institution of Mechanical Engineers. Successful as that motor has been, it would be foolish to suppose that it is the only type of oil engine which gives satisfaction; and excellent results have been obtained with oil engines working on the semi-Diesel principle. During the next few years we may be sure that inventors will be busy upon improvements for these engines. There is no doubt, however, that the Diesel engine has stimulated the liquid-fuel industry. Dr. Diesel himself says "that from the latest geological researches it has been shown that there is probably as much, and perhaps more, liquid fuel than coal in the earth, and, moreover, in much more favorable and more widely distributed geographical positions."

We may mention that an excellent treatise on the Diesel engine has just been published; and the author, Mr. A. P. Chelkey, is to be congratulated upon being the first in the field

with a volume on this most interesting subject. The book is well illustrated and lucidly written. An interesting statement made therein is that experiments have been made on a large scale with vegetable oil, and these have been quite successful. It is said that the French Government have in mind the utilization of the large quantities of arachide or groundnuts available in the African colonies, and easy to cultivate. In that way it is hoped that power and industries may be provided without the necessity of importing oil or coal.

### THE CRY OF THE GIRAFFE

Those who read the accounts of the giraffe in the text books and descriptions given by travelers may have noticed that no mention is made of its voice. Sportsmen, in fact, allude to its apparent voicelessness.

Nor so far as the records go has it ever been heard in captivity. Up to the present it appears that no one could say whether the cry of the giraffe was a groan, a bellow, a bleat or

a neigh. Hence the record of the most recent experience of a naturalist in East Africa, who has actually heard its voice, is of special interest.

Blaney Percival, the naturalist in question, spent the day in concealment over a waterhole, where the wild animals came to drink. He had at times giraffe and zebra drinking within thirty feet of him. While thus watching he had the good fortune to hear the giraffe.

It was making a bleating noise, but Mr. Percival says it is quite impossible to describe the sound in writing. "The nearest I can get to it," he says, "is 'war're' rather drawn out, not just a 'baa,' like a sheep, but more prolonged, and the softening at the end more noticeable."—The Field.

"I wonder if your sister realizes, Johnny, that during the last three months I have spent many dollars in sweets on her?"

"I'm sure she does, Mr. Sweetly; that's why she's not letting on she's engaged to Mr. Bigger."—New York Evening Mail.

Sergeant—Why do you think this dog was stolen from a lady?

Policeman—Because as I walked down the street with it, it stopped in front of all the department store windows.—New Orleans Times-Democrat.

## Battle Practice of British Squadrons

The battle practice of the various squadrons in 1911 and the results of the gunlayers' tests have recently been published, though as the Admiralty papers mentioned, "the conditions of practice differed widely from those of previous years, and no comparison can be made." Generally, the firing of the navy was maintained, and as far as could be compared showed an advance on previous years. The result of the battle practice places first the Australian Squadron; the first division of the Home Fleet, composed entirely of "Dreadnoughts," stands fourth, the best ship of this division being the Collingwood and the worst the Invincible, a battle-cruiser with the unenviable name of a "roller."

than double the weight of metal, viz., 14,000 lb., compared with the 6800 lb. of the first all-big-gun ship.

### Above the Fiery Furnace

It appears from Mr. Churchill's statement in the House of Commons that the only ship which has officially reported intense heat from the fore funnel, causing the fire-control station on the mast to become an excellent imitation of the lower regions, is the Hercules, and in this ship the position of the fire-control station is being altered. The same trouble was found in the battle-cruiser Lion, and it is said when at full power she was at times showing a flame 20 feet high from her fore funnel. The sooner we find a better position for the jack in the

## The Three Musketeers

It is comparatively recently that the world came to know that the last hero of romance of world-wide reputation, Cyrano de Bergerac, had existence long before M. Edmond Rostand brought him forward with a long nose, and some pretty verse to say, and thus made him a hero for playgoers of all nations.

The original Cyrano was a man of some note in his time, and wrote a "Journey to the Moon," which has been republished since the play. He actually did die pathetically within convent walls, and the death-chamber, within a stone's throw of the Champs Elysees, existed until the workmen's pickaxes demolished it four or five years ago. But how many other heroes of romance ever existed in reality? The heroes of Dumas—d'Artagnan and the Three Musketeers? It was thought not until quite recently, but now—and it is no shame to Dumas to say so—it is found that they, too, had fallen in with writers of history, and were personages of fact before they came to Dumas' presence and became personages of fiction. They were strange phantom figures when

Dumas met them. His busy pen had not been in use for many a day when his old friend Auguste Maquet came to him with a worn and tattered duodecimo, an odd volume of a set of three that he had picked up at a riverside bookseller's for a matter of a few sous. "Memoires de M. d'Artagnan, capitaine lieutenant de la premiere compagnie des mousquetaires du Roi," par "Montfort polygraphe (Cologne et La Haye, 1700)." Here were d'Artagnan, Athos, Porthos and Aramis, and de Treville into the bargain. A certain "mildy" made a vague figure in the background. But the chronicler-historian had a poor reputation for veracity.

### The Real Athos

Montfort was the pseudonym of a certain Courtill de Sandras, whose pamphlets and Anacreontic verse had got him into trouble first with the French and then with the Dutch Governments. He even spent a spell of nine years in the Bastille. So Dumas chose to disbelieve in the historic existence of the gentlemen who bore the Greek names of Athos, Porthos and Aramis. He accepted the first adventures of d'Artagnan, the cadet of Gascony, who journeyed up to Paris on spavined Rosinante, with only ten crowns to his credit, and then carried his new-found heroes into another world entirely of his own making. It was in this way that they came to be favorite companions of Count Beust, of Bismarck, and of the late Lord Salisbury in their leisure moments.

Probably Dumas would have been more surprised than any one to know that his heroes after all had really had an historical existence. Armand de Sillegue, Seigneur d'Athos, known as Athos, the most austere companion of d'Artagnan, died in the parish of St. Sulpice in Paris in 1643, after having been a musketeer of the king's guard. He is thought to have been killed in a duel, for his body was found in the pre-aux-Clercs. Athos, the village of which he was—if one may say so—lord of the manor, is in Bearn, near Sauveterre, Isaac de Porthau, a swaggering blade, born at Pau, was the Porthos of the novel, but according to history he was with Athos in the musketeers for one short year only.

Aramis in real life was Henry d'Aramitz, who long was the companion of Athos. He had a tame ending. History makes no mention of his entering a convent. He married happily, and descendants of his two daughters are still living. De Treville, captain of a company in the musketeers, was the uncle of d'Aramitz. He commanded the musketeers in 1634, and died in 1672.

### D'Artagnan's Birth

So much for those who Dumas thought had lived only in the pages of the forgotten eighteenth-century romance. As for d'Artagnan, born in 1620 at the Castle of Castelmore (still standing), he came to Paris in 1640, in time became captain in the Guards, then lieutenant in the Musketeers. He married in a chapel at the Louvre Charlotte Anne de Chanlecy de Sainte-Croix, who brought him a dowry of 84,000 livres and furniture worth 6,000 livres. The marriage contract was signed by Cardinal Mazarin and by the King. He lived on the left bank, nearly opposite the Tuileries, in a house within a few yards of that in which Voltaire died. He left his wife after a time and campaigned in the low countries until he was shot dead in the trenches outside Maestricht in 1673. His goods and chattels after his death were valued at 4,500 livres.

Some papers just published give a copy of the inventory on which this estimate was based. D'Artagnan owned two coaches, one to seat four, lined with green silk, having four Venetian mirrors in the interior; the other to seat only two, and lined with red silk. The ante-chamber contained riding boots, saddle, and trappings, a traveling trunk, and the valet's cauch. The bedroom was hung with Flemish tapestries. A mirror and a portrait of Anne of Austria hanging between the two windows overlooking the Seine, were the only other ornaments on the walls. His personal effects would have fitted out the whole company at the Porte St. Martin Theatre—vests in brocade, scarves and cuffs in lace, gold buttons, ribbons, silks and satins, a baldric, and a pair of holsters in Spanish leatherwork, a pair of pistols, and two rapiers. Not a single book is mentioned. His only papers were his titles of nobility, his marriage contract, and some bills.

### The Blind Beggar

They were discussing the deputation that waited on Mr. McKenna the other day with reference to the maintenance of the blind.

Said one man: "A tram conductor passed a bad shilling off on me the other day and just as I discovered it I passed a man standing in a corner with a sign 'I am blind' on his breast, a tin cup in his hand, and a little dog at his feet. I was very annoyed about the shilling and wanted to get it out of my sight as soon as possible, so without really thinking what I was doing I slipped it into the man's tin cup. I hadn't turned away when the man cried out, 'Here, that's no good to me!'"

"Great Scott!" I exclaimed. "Aren't you blind?"

"No," he said; "I'm begging for the dog."

—M. A. P.

Bamboo hats are made in the Philippines at prices ranging from 15 cents to \$12.50, while some specially fine weaves cost as much as the finest Panamas of South America.



Delivering Eight Tons of Steel a Minute—Broadside of Ten 12-in. Guns on a Modern Battleship

Eight tons of steel being hurled through space at a speed of over half a mile a second by the 12-in. guns of the Brazilian battleship Minas Geraes



The Last Word in Submarine Craft—The New "D 7"

This boat approximates more nearly to a submarine cruiser than any other boat yet built, for she carries two guns. She is regarded as marking a distinct stage in the evolution of submarine craft. She can remain below for forty-eight hours, and her fuel capacity is equal to a run of 4,000 miles; she could in fact cross the Atlantic without replenishing her oil tanks. Her Diesel oil tanks develop 1,200 h.p. Though heavy oil is used there is no danger from the petrol fumes. Her armored conning tower is another distinctive feature. The view shows her vertical hydroplane for steering under water.

### Increasing Armaments

It is interesting to note that the armament of our super-Dreadnoughts continues to increase in power. It is now known that the new battleships being commenced will, like the King George V. class now building, mount a new type of 13.5 gun, throwing a shell of 1,400 lb. in contrast to the 1,250 lb. of the present 13.5 gun. On comparison the fire of a broadside from the super-Dreadnoughts, King George V., Ajax, Centurion, and Audacious will be able to discharge considerably more

box, as the control station is termed in the fleet, the better for all concerned.

### New Pier for Scapa Flow

Scapa Flow with its dangerous currents and its rocky coast-line is to have at last a pier worthy of the name. Scapa Flow, which is rapidly becoming an important naval station in the Orkney Islands, has a pier which as officers well know is "a brute." Now we learn that £8000 is to be spent upon extending it and improving the landing accommodation.

plane as a danger to be considered and looked into in every practical way; thus we have some excellent naval airmen in training at Eastchurch, most of whom are at present engaged in competition for Mr. A. Mortimer Singer's £500 prize, which is only open to the navy and the marines.

### Russia's Programme

Russia's naval programme will reach £15,000,000, which exceeds last year's expenditure by some £5,000,000.