NEW MOTOR CAR TO BE BUILT BY D. M'CALL WHITE

Designer of Cadillac Resigns and Enters New Organization With Factory at Indianapolis.

Indianapolis has been announced as the location of the automobile organization of D. McCall White and E. C. Howard, who are preparing to market a high grade of car.

Within a few days, the new company, the name of which is not yet known, will move from Detroit to Indianapolis and begin operations in a large modern plant, which was recently purchased from the bondholders of the Stenotype Co.

With more than 150,000 square feet of floor space immediately available, the company is prepared to go ahead very rapidly, after the design of the car has been thoroughly tested and approved. Ample acreage has been provided for expansion.

Ever since their resignation from important positions in a Detroit motor car factory, the movements of Messrs. Howard and White have been the source of great interest in the trade.

Mr. White designed the Napier, Daimler and eight cylinder Cadillac. With this background and with the benefit of war experiences behind him, his latest product promises some rather advanced features in a sound chassis design. Mr. Howard recently resigned as sales manager of the Cadillac Motor Car Co.

Statistics show that the average death age among bachelors and spinsters is much earlier than among married men and women.

Coal Is Not a Necessity When Scientists Release Energy Locked in Atom of Matter

During Time Taken by a Bullet to Fly Without Resistance From the Muzzle of a Rifle to a Target 300 Yards Away, a Particle Shot From Radium Would Have Traveled the 3,000 Miles From London to New York—The Time Needed Is Only a Quarter of a Second.

Sir Oliver Lodge, doyen of British scientists and one of the most powerful thinkers in the world, predicts chemistry will soon produce an energy of such concentrated power and explosive violence that the very existence of the planet will be endangered.

Sir Oliver points out that a chemical element known as niton is so spontaneously active that a single pound radiates an energy of 10,000 horsepower. He expresses the hope that the enterprising nation whose inventive genius perfects this all powerful energy will prove so humanely civilized as to hold its destructive power in check.

By SIR OLIVER LODGE.

London, Sept. 3.—A pinch of coal dust or a thimbleful of oil represents at present the most portable form of power. If the whole of the energy resulting from these, when combined with oxygen, could be really utilized they would yield quite a considerable store.

An ounce of oil completely burnt would heat between six and seven pounds of water from freezing to boiling point, which is the equivalent of 410 foot-tons. A ton falling a height of 410 feet would generate the same amount of heat.

An ounce of coal completely burnt would yield slightly less energy. A spoonful of nitro-glycerine, again, represents a considerable store of enenrgy, though of rather a violent and intractable kind.

Does Matter Contain Energy?

But is there any kind of energy locked up not in the molecule nor in the interaction between molecules but in the actual structure of each atom? Does a single atom of matter contain energy by reason of its constitution? And, if so, is there any means of getting at it?

Previous to the discovery of radium the question could hardly have been asked. The answer is now known. In radioactive substances there certainly is a store of atomic energy, and some of the energy is liberated by the emission of flying particles flung off from time to time whenever the atom is degenerating or passing from a more complex to a more simple form.

And this emission of energy is very great. When it was first observed that a few grains of radium was continually giving off a great deal of energy and yet not disappearing, some scientific men, even Lord Kelvin himself, spoke of it as a sort of miracle. The stuff burned, as it were, and yet was not consumed.

It soon became clear, however, that there was no flaw in the law of conservation of energy. The stuff certainly possesses and certainly loses all the energy it emits, but it loses very little weight. The disappearance of a single grain of matter out of, say, a pound is only detachable by careful weighing, but the power emitted during the disappearance of a grain would be enough to raise the temperature of a ton of water from freezing to boiling point.

We must remember, however, that no such effect would be produced even by a pound of radium in any reasonable time, for it would take a year to lose a grain.

And so the power is diluted down; there is nothing violent about it, and we know no means of hastening it, nor indeed of retarding it, either.

It is a remarkable fact that whether the bit of radium be made red-hot in a furnace or cooled hundreds of degrees below zero by liquid air, its rate of disintegration remains practically constant. People sometimes speak of radium as if it were unique. Not so; it is a striking member of a class, and it serves well to illustrate the properties of that class.

Every now and then an atom of radium explodes or fires off a projectile—what is called an "A" particle. The projectile bears to the residue of the atom something of the same proportion that a shot bears to a gun. It is like a two-ton gun firing a 100-pound shot.

Only now and then does a radium atom get to this explosive stage. For every one that thus exerts itself in the course of a year there are about 3,000 which remain quiescent for that period.

But directly one shot has been fired, the rest of that particular atom does not settle down into quiesence again till it has fired off four more, converting itself each time into a different element.

Some of these shots follow each other quite quickly, barely giving time to the experimenter to examine the properties of the intervening substances. Yet these substances are real elements, with chemical reactions of their own, and with a characteristic spectrum. Their peculiarity is that they are short-lived.

The greatest energy per unit weight of combustible material is burning of hydrogen in oxygen. This emits heat to the value of 4,000 units of heat for every gramme of water formed by the combination. But by the time a gram of radium has gone through its changes, a million times this quantity of energy would have been emitted. Let it not be supposed however, that only the atoms of radio-active substances possess this atomic energy. It is pretty certain that every kind of material atom must possess it, some more, some less; but for most atoms the energy is all locked up in their intimate structure, and is quite inaccessible.

Reveals Energy Secret.

The radio-active elements are those which do not keep the energy completely locked up. Once an hour one out of 30,000,000 atoms goes off with violence, and continues to fire at known though not quite regular intervals five times, till it becomes quiescent again. It thus gives away the secret of a vast store of energy.

Every atom is a complicated structure, a region of law and order, and in all probability no element is permanent. Disintegration is probably only a question of degree.

The unstable ones attract attention and enable measurements to be made. Some of these are fairly sedate, and like uranium, last millions of years. Radium lasts at most a few thousand years; but other elements are so prodigiously violent that they last only a few minutes. These, therefore, make themselves conspicuous even in small quantities, but naturally are extremely scarce.

An Abundant Store.

he point for present consideration, however, is not the rate at which different elements choose to give out their store of energy, but existence of this store and its marvelous abundance.

The particles shot off from radium are shot with a speed quite amazing—about 1-15 that of light. To get some notion of this speed we may compare it with the highest speed of a bullet. During the time taken a rifle bullet to fly without resistance from the muzzle of a rifle to a target 300 yards away the "a" particle simultaneously shot off from radium would have traveled the 3,000 miles from London to New York. The time needed is only a quarter of a second.

And as to the energy of such a projectile—is is not much in itself, because its mass is so minute, but weight for weight it is four hundred million times more energetic than a bullet.

Limitless Atoms.

But, it may be said, radium fires them off so seldom. Each projectile is violent enough, uly, but you say there is only one out of 3,000 which explodes in the course of a year. That is so; but think how many there are in any visible speck of substance.

Take a milligram of radium— that is, take 1-17 of a grain—and ask how many projectiles such as we have been describing are fired off by each second. The number is no less than 30,000,000, even from the radium itself; and the number of projectiles is really five times as great as this if the products of disintegration are not allowed to escape.

Thirty million projectiles, each with 1-15 of the speed of light, come away from a milligram of radium every second, yet the speck will last a thousand years before it is half exhausted.

Chemical combination is "not in it" with energies such as this. And this is the kind of energy which is locked up, and at present inaccessible, in every atom of matter.

A little arithmetic would enable us to paraphrase the late Sir William Crookes and say that if all the energy in an ounce of matter could be extracted and fully utilized it would be enough to lift the German navy and pile it on top of Ben Nevis.

Sir Ernest Rutherford reckons that the gaseous emanation primarily given off from radium after firing its first shot—this emanation being itself a chemical element called Niton—is so spontaneously active that it actually does radiate energy at the rate of 10,000 horsepower per pound.

Undoubtedly, if the progress of discovery enables us to get at and utilize the energy locked up in a ton of ordinary matter per diem, no further motive power would be needed.

And if, furthur, we found ourselves able to liberate any considerable portion of such energy in a short period of time, the explosive violence would be such that the very planet would be unsafe..

It is to be hoped that no such facilities will fall to the lot of an enterprising scientific nation until it is really and humanely civilized, and is both willing and able to keep its destructive power in check. Humanity is not ripe for every discovery, but in due time, and when it can be applied to useful and beneficial ends, I doubt not some such power as that here foreshadowed will be attained.

Asleep in Alley is "Cleaned"

St. Louis, Sept. 20.—In the days days of old the vale of Philistia was a path of peril to strangers, but, according to to Edward Hertrich, of Alton, Ill., it had nothing on St. Louis.

When Edward arrived here he thought his $250 tucked away in his pockets, would show him some of the sights. Two girls met Edward. Flo, the blonde, introduced him to May the brunette, and the three walked into the cabaret. Drinks were ordered, and when Edward awoke the girls and $60 of his money were gone.

(Note: This is No. 5 of a series of eight lessons in the care of solid truck tires prepared by The B. F. Goodrich Co., Akron, Ohio.)

CAR TRACK ABUSE

Injuries resulting from running solid tires in car tracks are serious and readily apparent. Their construction does not permit of ready distribution of a part of the load to the lower flange of the rail, so the major part of the load is carried upon the upper section of the car rail. This throws the entire load on one-half of the tire tread with the result that it is quickly worn or broken away at that side, eventually leaving the tire, reduced by one-half to carry the full load.

Aside from the premature destruction of solid tires subjected to car track abuse there is the element of danger from skids when the moving tire comes in contact with frogs and switches. Injury from car track riding is not confined to one or a few spots on the tire, but the rubber is worn down in a line following the entire circumference of the tire. It is obvious that the best tire will fail under such treatment.