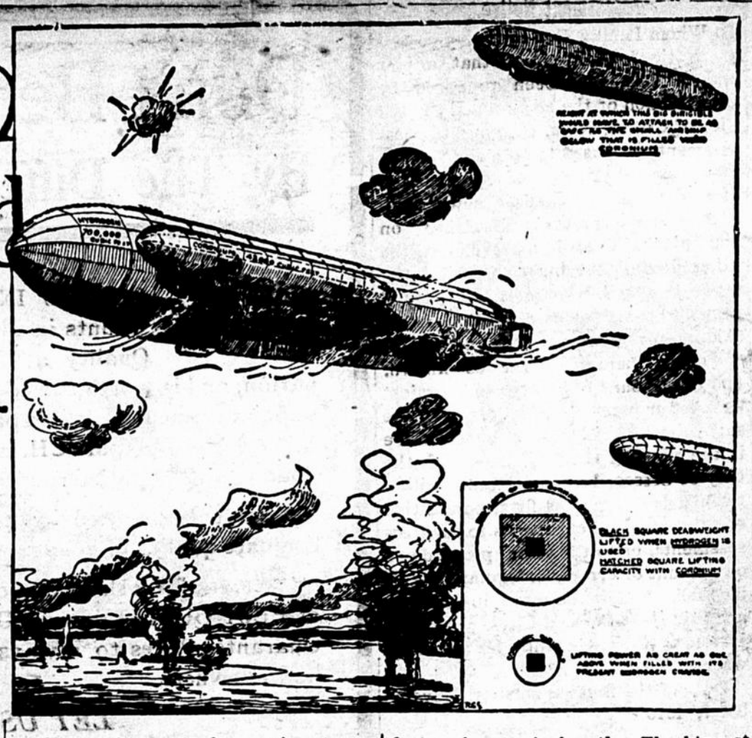
Coronium Discovered at Last



IS that will-o'-the-wisp of the physicist, the gas coronium, at last in the grip of the chemist, as was stated in a cable dispatch from London the other day? Have Sir William Ramsay and his fellows actually found earthly substances from which this elusive and extraordinary light element can be produced? If so aviation, or more accurately the range of the dirigible balloon, will be enormously increased. But this is only one aspect of a very wide field of possible services and significance.

The discovery of coronium is another example of the astonishing revelations which have come with the development of the spectroscope and its union with photography. By means of this wonderful instrument physicists have been able to detect and render visible the unseen of millions of miles away. As Professor Mendenhall expressed it a few years ago:

"By this device man is put into communication with every considerable body in the universe, including even the invisible. The goings on of Sirius and Algol, of Orion and the Pleiades are reported to him across enormous stretches of millions of millions of miles of space, empty save of the ethereal medium itself, by this most wonderful wireless telegraphy. And it is by the vibratory motion of the invisibly small that all of this is revealed; the infinitely little has enabled us to conquer the inconceivably big."

But the spectroscope would be incomplete were it not for the exceedingly ingenious apparatus called the bolometer, invented by the late Prof. S. P. Langley. The sensitiveness of the bolometer is so exquisite that it responds to temperature changes of a millionth of a degree. The bolometer is an eye that sees in the dark. To quote Professor Langley:

"Since it is one and the same solar energy whose manifestations are called 'light' or 'heat,' according to the medium which interprets them, what is 'light' to the eye is 'heat' to the bolometer and what is seen as a dark line by the eye is felt as a solid line by the sentient instrument."

Here is an example of how this apparatus revealed to Professor Langley what had been considered far beyond the pale of the recordable. He was using the bolometer up on Mount Whitney and was working away at the known spectrum, patiently measuring the heat of the various lines. He stumbled upon a great discovery. "He went down the spectrum, noting the evidence of invisible heat die out on the scale of the instrument until he came to the apparent end of the invisible, beyond which the most prolonged researches of investigators up to that time had shown nothing.

"There he watched the indications grow fainter and fainter until they, too, ceased at the point where the French investigators believed they had found the very end of the end. By some happy thought he pushed the indications of this delicate instrument into the region still beyond. In the still air of this lofty region the sunbeams passed unimpeded by the mists of the lower earth, and the curve of heat which had fallen to nothing began to rise again. There was something there! For he found, suddenly, unexpectedly, a new spectrum of great extent, wholly unknown to science and whose presence was revealed by the bolometer."

Thus the way was prepared for the detection of coronium.

During the solar eclipse of May 28, 1900, Professor Abbott, with the aid of Professor Mendenhall, was able to measure the heat of the corona, and that was probably the first time that it was really shown to exist. Here, again, the spectroscope, photography and the bolometer rendered great service.

The sun as ordinarily seen is bounded by the so-called photosphere and is really but a small part of the true sun. Outside the photosphere is an envelope composed mainly of hydrogen, and outside of this there is another envelope which has been called the corona. The beautiful photograph taken in May of 1900, which accompanies this article, illustrates this part of the sun. It is estimated that the height of the corona in the sun's atmosphere is a matter of half a million miles; and it is believed that toward the photosphere the heat is so intense that the chemical elements are dissociated into finer forms of matter. In the cooler regions of the sun's atmosphere, near the boundaries of the corona, vapors give place to solid particles and masses. The corona intercepts enormous quantities of heat from the sun, and in this seething zone coronium is born, at least, so says the spectroscope.

The nearest approach we have in nature and upon this globe to the intensely heated atmosphere of the corona of the sun is in the molten masses deep in the earth. The only normal outward evidence of this combustion is that afforded by active volcanoes. Accordingly, we might reasonably expect some of these to exhale coronium, and such indeed has been found to be the case. About 15 years ago Professor Nasini of the University of Padua, Italy, submitted a note to the French academy in which he declared that he had found coronium in the gases taken from the crater of Vesuvius. In view of this volcanoes may assume a new importance along practical lines, and even dead craters may prove of use, because within the lava may be found the material from which coronium may be manufactured.

Hitherto hydrogen has been the unit of weight by which the specific gravity of other gases has been measured. Hydrogen is about twelve times as light as the air we breathe. Now comes coronium, which is 16 times as light as hydrogen, and therefore 192 times as light as air. It is easy to realize what this would mean to aeronautics if the new found gas could be produced in large quantities. There are some hardheaded scientists, however, who are not encouraging, and among them is Dr. Rankine, who is associated with Sir Willim Ramsay. Dr. Rankine says:

"Personally I cannot see that even when found coronium will be of much use to airships. One thing against it will be its elusiveness. Helium is four times heavier than hydrogen, but it manages to creep out of any receptacle we can devise. It escapes from us almost as rapidly as we collect it."

But other men of science reply that this is really a mechanical problem and is quite apart from the production of coronium. Electricity is elusive enough, they point out, and yet man has found ways to control it.

Anyhow enthusiasts of a so-called scientific turn have already been giving their imaginations full play, and if coronium can be produced here they predict a revolution in aerostatics. One of them has said that we need not worry about the days to come when the light of the sun grows dim and this globe of ours becomes too chilly for comfort. When that time arrives the frostbitten human denizens of this sphere can take passage in airships, thanks to coronium, and sail away to any distant planet that may seem more habitable. He hedges, however, by saying that this will not be necessary for a million years to come, and by that time, he hopefully concludes, means will have been discovered by which it will be possible to combat atmospheric conditions during the trip from the earth to the other world.

One of these conditions is a lack of oxygen. A short while ago three meteorological experts went up in a balloon to a height of 33,000 feet, and at that altitude life was sustained only by breathing through a special respirator that supplied them with fresh oxygen. The Germans have actually prepared a breathing apparatus which will sustain aeronauts up to a height of 50,000 feet—at least this has been established by laboratory experiments.

The lifting power of 1,000 cubic feet of coal gas is equal to about 14 pounds, while a similar volume of hydrogen will raise 70 pounds. Hydrogen's lightness, despite its elusiveness, therefore, has so far made it the best obtainable buoyant agent for aircraft.

The latest Zeppelin airships have gas bags which have a capacity of nearly 700,000 cubic feet, have a diameter of 40 odd feet and are of 500 feet and more in length. The biggest of these have a total lifting capacity of 20 tons.

If coronium could be employed instead of hydrogen, an airship of the same lifting capacity would have a total length of a trifle over 200 feet and its maximum diameter would be considerably less than twenty feet. In the place of gas bags holding 700,000 cubic feet of hydrogen its containers would have within them but 43,000 cubic feet of the lighter gas. The smaller airship would obviously be cheaper to construct, speedier and more manageable. It would be able to stay afoit longer and sail further. The best of the Zeppelins have remained aloft about thirty-five hours, and this is suggestive of what the more mobile smaller and swifter airship could do when sustained by means of coronium.

There is another phase of aeronautics in which coronium would be of great value. Meteorologists have been reaching ever higher into the atmospheric zones in their endeavor to determine the conditions that prevail there. Sounding balloons charged with hydrogen have been used to take temperatures at different heights up to fifteen miles. Could coronium be used instead of hydrogen the ocean of air could be penetrated a great deal further and possibly astonishing information would be obtained.

One remarkable discovery has already resulted from the use of sounding balloons. Theoretically the temperature of the air falls one degree Fahrenheit for approximately every 300 feet of ascent, and this rate of reduction was supposed to go on reguraly. It is now established that within the lower two miles of the atmosphere this rule is frequently reversed. Above this, however, there is more regularity. Formerly it was supposed that this went on unbrokenly until the cold of distant space was reached, something in the neighborhood of absolute zero.

When the sounding balloon records were accumlated one of the first facts apparent was that at a height, generally of something like six miles, the temperature actually ceased to fall and even tended to rise. This continues to be the case as far as the sounding balloons have gone afolt. This zone of comparatively mild temperature is also apparently a region of relative calm, but we do not yet know how far heavenward this stratum extends.

So far consideration has been given only to the services that coronium may fill for man because of its lightness, but who shall say that there are not other ways in which it may act helpfully? It is the unsuspected properties of radium that have proved of the utmost value since its discovery. Perhaps coronium may hold possibilities of an equally important nature.

His Lordship's Beard.

A certain peer, who had a very long and very bushy beard, had dismissed his valet for the night. Shortly afterward, however, he was much annoyed to hear peals of laughter from below, and called back to the man to explain. The valet answered that it was just a little joke, but his lordship would have none of it, and demanded the details, angrily.

"Well, admitted the man, with reluctance, "it was really a little game we were having, my lord."

"What game?"

"Well, my lord, a kind of guessing game."

"Don't be a fool, Waters! I rang for you in order to get an explanation. What guessing game were you playing? Guessing what?"

"We blindfolded the cook, to tell the truth, my lord, and then one of us kissed her, and she had to guess who it was. The footman held the mop up and she kissed it, and then cried out: 'Oh, your lordship! How dare you!'"

New Sport in the Alps

"Bob-rolling" is the latest summer sport in the Alps. The roll bob is the invention of Mr. Sanger, a well-known sporting visitor to Davos Platz. It is fitted with rubber-tired wheels and proves a highly amusing and exciting sport. The only danger is running on wet roads as the bob is liable to skid. They are much used on the bob run from Davis to Klosters.

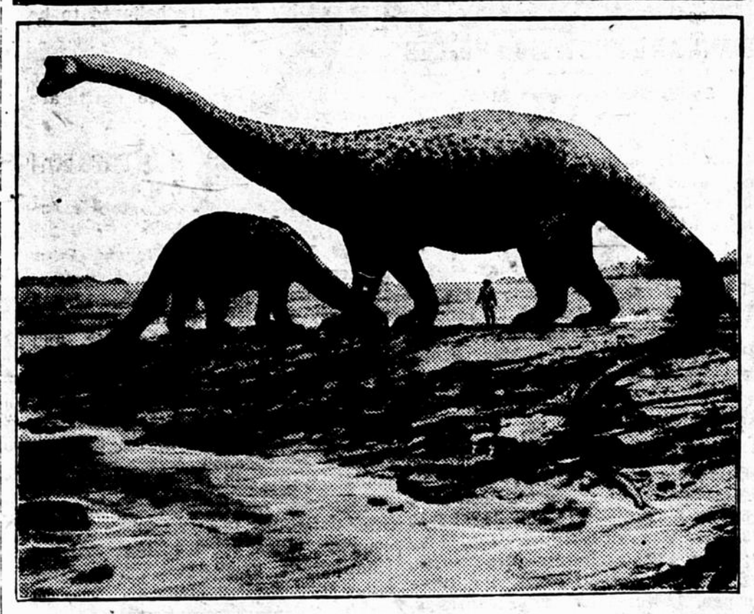
HORNETS' QUEER NEST

During a ramble at Skaralid, in southern Sweden, a traveler descended the boulder-strewn side of a deep ravine. While descending the precipitous slope he passed close to a beautifully formed hornets' nest attached to the under side of a boulder. For some minutes he watched the inhabitants passing in and out, and then, in case of a meditated attack, he charged and lit his pipe, which presently poured forth volumes of smoke that would have compared favorably with a factory chimney, and approached within five feet of the nest to set his camera in position, a rather risky operation on account of the very unstable condition of the debris—a movement of one stone would have set the nest in motion, to tumble down over the poor tourist into the valley below; the odds being greatly in favor of the hornets coming out of the ordeal in the better frame of mind. The nest, which was round, measured about nine inches in diameter at its widest part, and it will be seen by the proportionate size of the hornet at the entrance that the insects seem to thrive exceptionally well in this part of the country.

LONG SERVICE

An idea for recording long service has been introduced by a wholesale dry goods firm in London. In the main office an ornamental tablet has been set up, and upon this are inscribed all the names of employes who have been in the service of the firm for 25 years. The date of entering service is also given.

Gigantosaurus Africanus



Recent discoveries have revealed in Africa remains of a land-dragon whose length measured some 160 feet. The monster was discovered by German savants at Tendaguru, in German East Africa. An almost complete skeleton was obtained. The cast of the upper arm-bone, or humerus, now at the British Museum of Natural History, and descriptions of the rest of the skeleton show that this colossal beast was a near relation of Diplodocus Carnegii. Now, Diplodocus was just 84 feet long, and stood 11 feet high at the shoulder. His arm-bone measured just 3 feet 3 inches long. The arm-bone of the new giant, Gigantosaurus Africanus, was as long as the whole leg of Diplodocus; it measures now just 7 feet 1 inch, but during life it was certainly some inches longer, for no allowance has been made for the gristle which must have capped both ends. It may be that Gigantosaurus will lose something of his glory, at any rate so far as his length is concerned, for it is assumed that he was a long-tailed dragon, like his American cousin. He may not have been. In height Diplodocus was nowhere; his 11 feet at the shoulder is far eclipsed by the 22 feet of his rival. Naturally, it is difficult, not to say dangerous, to dogmatise on the theme of the habits of Gigantosaurus. He lived during that remote period of the world's history during which the lower cretaceous rocks were formed; a period which ante-dated the birth of man by several million years. We shall probably be not far from the truth in regarding him as an aquatic, or, at any rate, an amphibious creature. That he was a vegetarian is shown by his teeth, and that he was dull-witted is proved by the ridiculously small size of the brain cavity, less than would hold a man's fist. The Illustrated London News artist has reconstructed the great land dragon, and has set by it a man and Diplodocus Carnegii, to emphasize its enormous size. For the rest, we cannot do better than reprint a few of the facts from the article which appeared with the photographs.

HISTORY TOLD IN STAMPS

Everyone who has collected stamps must have noticed the absence of sovereign's heads from those of Turkey. That this is so is due to the fact that Mohammedans consider a representation of the human face or figure unlawful. Therefore Turkish stamps carry the crescent, which the Turks borrowed from the Byzantines after the fall of Constantinople. They also used a complicated, arbitrary sign supposed to be the signature of the sultan.

Egyptian and Grecian stamps are peculiarly expressive of the history of the countries which they represent. The pyramids, the mystic Sphinx, tall palm trees outlined against the night sky, a train of camels stopping to drink from the river Nile, all carry us back to the very beginning of history and remind us that Egypt, the mother of civilization, is still called by her ancient name, and is yet a growing power in the world she has known so long.

Beautiful, artistic Greece, the home of beauty, from which our sculptors and architects draw their finest inspirations, gives us pure classic lines on her stamps, which show the famous discus thrower, Hermes of the winged feet, or a chariot race, or a tall, slim vase, an antique mold.

The stamps of Persia show the lion and the sun—the lion as a symbol of power, and the sun as an emblem of the ancient fire worship of the Persians.

Corea displays the plum-blossom on her stamps. It is the royal flower of her last dynasty—a dynasty which reigned for 500 years, until the hardy little Japanese wrested it away.

The Mexican stamp bears the coat of arms of the country, an eagle on a cactus, holding a serpent in its talons. This device is the outgrowth of a legend that the first Aztec settlers chose the site of their city from seeing an eagle so engaged, and situated at that spot.

DOGS AS POLICE AIDS

Pasha von Hochwacht, a German shepard dog, owned by Benjamin H. Throop of Scranton, Pa., making a nine-foot fence while trailing a culprit. One of the trainers of the dog came out on the field at Van Cortlandt park, New York, where the exhibition of police dogs took place, and was presumably knocked senseless with a brick hurled by another attendent. Pasha was then sent out on the trail. Taking up the scent from the brick which he discovered, the dog got the trail and was soon off after the fugitive, who was finally caught. It was fortunate that he was well padded, for Pasha, who is a powerful dog, was anything but gentle with the supposed to be culprit. The nine-foot fence which the dog leaped while on the trail was the highest obstacle placed in the way of the dogs, and Pasha alone succeeded in clearing it. Considering that full 10,000 people were present at the exhibition, and that they crossed and recrossed the field over which the trail left by the supposed culprit led, the dogs performed remarkable feats and astounded the visiting police officials from other cities.

HANGED BY RESCUERS

A rope thrown to save a man's life, who had fallen down a crevasse, in the Alps, near Berne, Switzerland, the other day, got caught round the man's neck and strangled him. Three young Swiss climbers were attempting an ascent of this dangerous mountain without guides when one of them, Lieter, of Berne, fell about 40 feet into the crevasse which was half covered up with snow. As he was joined to his comrades by a rope he remained hanging in the air. The rope, however, had become jammed in, and a second one, with a running knot, was thrown down to him. By this means he was eventually drawn up, but when brought to the surface he was dead, strangled by the rope catching him round the neck.

NEW SOURCE OF PAPER-PULP

Discovery May Put an End to Problem That Has Been Worrying Newspaper Publishers.

Several promising sources of paper-pulp were recently noted in these columns. Another may now be added to the list—the wide-spread and hardy plant, broom corn. Successful experiments with this have been made in Italy. In Prometheus (Berlin) we read:

"The fibrous twigs are broken in a sort of flax-breaker, then treated for a considerable length of time with caustic soda lye, and afterward put through the breaking machine a second time. The mass is freed of moisture by means of hydraulic presses, after which it is separated into fibers, washed and bleached. The material thus obtained sells for about a cent a pound, and is of excellent quality, suitable for making the best grades of paper. The liquid pressed out from the pulp is a valuable by-product, since its high content of alkali makes it useful in the soap industry."—Translation made for The Literary Digest.

Acute Business Man.

Prospective Tenant—"Number t'irteen? It might nod be lucky to live in a house vot vas number t'irteen." Agent—"You don't believe in such nonsense as that?" Prospective Tenant—"Vell, vot reduction vill you make in der rent if I take da chances?"—Puck.