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WASHINGTON, D. C.

SCIENCE NEWS BULLETIN

No. 22.

Edited by Watson Davis

August 29, 1921.

ARMY'S NEW AIRSHIP, ROMA,
NEARLY RIVALS LOST ZR-2.

(By Science Service)

Washington, August .- In spite of the recent disaster of the ZR-2, the world's largest airship, America has a large lighter-than-air craft that will be able to cross the continent or the Atlantic Ocean.

This is the semi-rigid ship, the "Roma" which is now being assembled and erected at the Langley Field, near Norfolk, Va., by the Army Air Service. This airship like the ill-fated ZR-2 was purchased in a foreign country, in this case, Italy.

This craft, which will be the sole capital ship of this country's air forces, is expected to be ready for her first flights in this country in about a month or six weeks. For about a month, army mechanics have been erecting the craft, which unlike the ZR-2 has no rigid frame throughout its body.

The Roma, technically known as Model T-34, is 410 feet long, 290 feet shorter than the ZR-2. If it were stood up on end by the side of the Washington Monument, it would be outclassed by 145 feet. But in girth, the Roma is practically the equal of the ZR-2. The army's ship, is 82 feet thick and 90 feet high, while the wrecked naval craft was 85 feet wide and 92 feet high. The Roma will need 1,193,000 cubic feet of hydrogen to fill its large gas bag. The capacity of the ZR-2 was 2,720,000 cubic feet. But in speed the Roma is expected to outclass the wrecked ship. Eighty miles an hour is the estimated speed of the Roma while the ZR-2 only had a maximum of 75 miles per hour. The Army's new ship will weigh 38 tons when fully loaded, and 21 of those tons will be made up of crew, ballast, fuel, and other useful load, which could include 100 passengers. It has six 12-cylinder, 400 horse power Ansaldo engines, placed in pairs at the two ends and the center of the ship.

The Roma is of a radically different design from the wrecked British-built ZR-2. English aeronautical designers patterned their ships to a great extent after the German Zeppelins, which have rigid frames that do not allow the gas bag to deflate even when empty. The Roma was built by Signor Celestino Usueli, a wealthy Italian business man in collaboration with the engineer, Prassone, Colonel Crocco, and others, who believe that the semi-rigid construction, in which frame-work is only needed along the keel of the gas bag, has all the advantages of the rigid ship while reducing the expense of construction and considerably speeding up this work.

Aeronautical experts of this country and other parts of the world had been looking forward to the performances of the Roma and the ZR-2 as the first real comparison between large ships of the two different types,

and news of the loss of the British ship caused regret on that score as well as because of the loss of life.

The Roma, which is the largest semi-rigid ship ever built, was designed originally for the purpose of flying across the Atlantic. This feat, however, was abandoned as there appeared to be no material gain in such a flight except for demonstrative effect, and the ship was knocked-down and sent to this country as freight. While in Italy, it underwent strenuous trial flights.

Both the ZR -2 and the Roma were bought by the United States government so that the lighter-than-air forces of this country would have a flying start in its building process. The lessons that were to be learned from them would be utilized in the building of airships here in America.

Besides the Roma, the air forces have only totally non-rigid "blimps" and captive and kite balloons. The army has three "blimps" in commission, while the Navy has about the same number.

FAITH IN AIRSHIP NOT
SHAKEN BY ZR-2 WRECK

(By Science Service)

Washington, August .- The ZR-2 disaster has not shaken the faith of America's flying forces and commanders in the future and utility of the lighter-than-air ship.

"The aerial carrier of mail and freight in the future will be the airship, and at this work it will be more efficient and practicable than the heavier-than-air planes," declares Brig. Gen William Mitchell, assistant chief of the Air Service of the Army.

"For passenger travel they offer very interesting possibilities, as there is no dust, smoke, or unpleasant experience while traveling in them. For communication across the Pacific, or particularly to South America, airships will be a very efficient means of travel."

Gen. Mitchell points out that from a military standpoint the lighter-than-air craft carrying large loads will be of great use. They can be used for dropping explosives. A large airship can carry 200 fully equipped infantrymen and drop them off by parachutes if necessary. Airships will be the natural means of taking troops to parts of the country than can not be quickly reached by railroads or roads, he declares.

Admiral William A. Moffett, chief of the naval bureau of aeronautics, declares that the Navy will complete the ZR-1, the slightly smaller sister ship of ZR-2, if Congress will provide the funds, and also that other ZRs will be built if authorized. Metal for the frame of the ZR-1, and parts of the envelope have been fabricated at the cost of nearly \$1,000,000 and are in storage at Lakehurst, N. J. near the large hangar recently erected.

HELIUM CAN NOT YET
BE USED REGULARLY IN BALLOONS

(By Science Service)

Washington, August .- While American airships and balloons in the future will be filled with the non-burnable, inert, "rare" gas,

helium, the production of this gas and airship design have not yet reached the stage where the use of this gas can be an every day occurrence.

Hydrogen, though inflammable, will still have to be used for a time, and while its use sometimes leads to danger, except in case of a disaster that would probably wreck the gasoline tanks as well as the envelope, it will be sufficiently safe. This is the opinion of officers of the army and navy, and scientists at the U.S. Bureau of Mines, who have been developing the helium resources of this country.

The helium plant at Fort Worth, Tex., which, by compression and liquifaction, extracts helium from natural gas, is now producing about 10,000 cubic feet of gas a day, but the process and plant must still be improved. As helium is relatively expensive, the airships will have to be built so that the lifting power can be changed by some other method than wasting the gas into the atmosphere, as is the case at present when hydrogen is used.

IS TUBERCULOSIS DOOMED?

It is Decreasing and Experiments Show Resistance to It is Inherited.

By Dr. Walter Veazie,
New York University.

Will the great white plague disappear?

Diseases have histories - comings and goings - like everything else.

There was a time, and that not so many centuries ago, when leprosy was a scourge upon Europe; today it is a mere medical curiosity. So tuberculosis is decreasing at an accelerated rate. Its frequency has dropped nearly 60 per cent since 1865.

This decline undoubtedly is due in part to the growing prevalence of cleaner habits, better food and the cult of the open window, but the adverse food and living conditions incident upon the World War set back the improvement many years in Europe, especially in Austria.

Another factor, however, in the disappearance of the disease has recently been shown to be the fact that resistance to it is what the biologists call a dominant hereditary trait. Drs. Sweall Wright and Paul A. Lewis have just reported the results of their extended experiments on this resistance in guinea-pigs.

A dominant hereditary trait is a characteristic transmitted from parent to offspring, which tends to assert itself in the offspring over a contrary characteristic whenever the two are present together. For example, when tall peas are crossed with dwarf peas, as in Mendel's original experiments on heredity, the result is not a variety intermediate in height between the two, but all of the first generation are tall. To attain this result one must have pure lines of tall peas, i.e. with no intermixture of dwarfishness, but even with mixed generations the tallness will greatly predominate over the dwarfishness in crosses. Hence tallness is a dominant hereditary trait in peas.

Doctors Wright and Lewis secured a number of inbred families of guinea-pigs, that is, families in which brothers had been mated with sisters in each generation for many generations. When inoculated with tuberculosis these inbred families showed marked differences in their power of resistance to the disease as measured by the number of days they survived.

The high resistance of the most resistant families was transmitted in both the male and female line whenever members of these families were mated with members of other less resistant groups. Hence resistance to tuberculosis is an hereditary trait and also dominant for, as in the case of the tallness and dwarfishness of peas, more children of marriages between resistant and non-resistant parents will be proof against tuberculosis than will be susceptible to the disease.

In fact the children from crosses involving the best guinea-pigs families were more resistant than their parents.

These results give occasion for great optimism in respect to the ultimate outcome of our international campaign against the white plague as we are assured that Nature is allied with and not against us in the struggle.

SCIENCE VS. SPORTS
ON OBJECT OF COLLEGE.

(By Science Service)

New York, August .- Science has thrown down the glove to sports. What may develop into a free-for-all between those who believe in colleges for scientific education and those who contend that athletics are the primary object of our higher educational institutions has been started by an editorial in Chemical and Metallurgical Engineering, a weekly magazine here.

After singing the praises of the professors and scientists that have been gathered together by the University of California and the California Institute of Technology to tackle "the most fundamental problem of physical science today: that of the constitution of matter and its relation to the phenomena of radiation", this journal issues the following challenge to adherents of the slogan "College for Athletics":

"We do not want to appear before our readers as too radical or as iconoclastic. We recognize the value of traditions and the merit of maintaining them. But given a student with a mind open to mathematics and an unspoiled curiosity in regard to the unseen causes of things, we venture the opinion that there is more in it for him, somehow, to study among selected students with these masters of science than there would be if he were captain of a football team that is champion of the Pacific Coast, The Rocky Mountains, the Middle West and the Atlantic Seaboard all at once. There is more in it for him than there would be in making the Harvard Crimson fade away to a pale pink, the Yale Blue look almost white and in reducing the Princeton Tiger to a maltese cat on all the fields of sport. Shocking as this may sound, we venture to say it right here, in the open, on the irrevocable printed page.

"Now bring along your University Clubs!"

SEEDS LIVE THROUGH COLDEST TEMPERATURES ON EARTH;
METEORS MAY BE CARRYING SEEDS OF EXPLODED PLANETS.

(By Science Service)

Perhaps the meteors that are now travelling through space are carrying the seeds of dead planets that, aeons ago collided, melted and scattered into the interstellar space which is supposed to have a temperature of absolute zero, the coldest known.

✓ This may be possible according to experiments conducted by Monsieur Paul Becquerel, the French Scientist, which show that seeds have phenomenal resistance to cold and dryness.

M. Becquerel tried to find out how long a seed could live and how much ill-treatment it would withstand. He found that seeds can germinate after exposure to a temperature of 427 degrees below zero Fahrenheit, almost the lowest temperature which it is possible to attain on this planet. Mustard, alfalfa, and wheat seeds were used.

After puncturing the seed coat he dried these seeds for six months in a small glass tube from which the air had been exhausted. This alone would seem to be enough to kill any living thing, even a seed. The sealed tubes were then sent to the University of Leyden where the apparatus needed for obtaining very low temperatures was located. The tubes were placed in liquid air at a temperature of 190 degrees below zero Centigrade or minus 310 degrees Fahrenheit. After three weeks in the liquid air the tubes, still sealed were put into liquid hydrogen,--almost the lowest temperature ever attained in a laboratory--minus 427 degrees below zero Fahrenheit. After 77 hours at this temperature, the tubes were removed, unsealed, and the seeds planted under ordinary conditions of moisture and air. All the alfalfa seeds, and all the mustard seeds had the audacity to grow, and four out of five of the wheat seeds grew, showing that some seeds can withstand a temperature very nearly approaching absolute zero, calculated to be minus 273 degrees Centigrade or 459.4 below zero Fahrenheit.

Lord Kelvin was the famous physicist who once stated that he believed that there may be many meteoric stones carrying seeds, now travelling in space. These stones may be the debris which must have been shot into space when two planetary masses of equal size, clothed in vegetation came into collision, and then melted. Arrhenius as far back as 1859 explained how living organisms might escape from the field of gravity and travel through space if they could withstand the intense cold of the outer darkness, where absolute dryness prevails, and where absolute zero stops all chemical change, thus eliminating the possibility of that change which is believed to accompany death.

Becquerel's discoveries seem to answer one of the chief objections to this strange theory of the migration of life through countless ages from planet to planet.

FIRST NATIONAL RADIO CONVENTION
HELD AT CHICAGO.

(By Science Service)

Chicago, August .- From 2000 to 3000 radio operators and engineers from all parts of the country are expected to attend the first national convention and radio show of the American Radio Relay League here in Chicago, August 30 to September 3.

The program includes papers and entertainments of a novel character, and the latest improvements in commercial and experimental wireless apparatus will be shown at the exhibition.

Secretary of Commerce Hoover will send a radio message to the convention which will be sent from the Post Office radio station in Washington to Cincinnati and then relayed to Chicago where it will be received in code in a loud-speaking telephone. Each radio enthusiast, in true operator style, will take down in writing the greeting as it is received. Secretary Hoover is the cabinet officer who administers the government regulation of radio in this country through the Department of Commerce Bureau of Navigation.

Rear Admiral W.H.G. Hullard, in charge of wireless for the Navy, will be present at the convention.

(Editors: Here is another supply of fillers or six instalments of a daily feature.)

DO YOU KNOW THAT-

Ventilation of the soil has been found to affect the growth and quality of plants.

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A gram of radium continuously sends off helium atoms, known as "alpha particles", at the rate of 145,000 billion a second, traveling at a speed of 12,000 miles a second.

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Coal finely pulverized by the McLaughlin atomizing process makes a beautiful and durable black paint suitable for furniture. It is also used in making ink.

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The common belief that very clever children generally turn out to be dull and that many exceptionally able men and women showed little intelligence in their schooldays has been investigated by Prof. L. M. Terman, of Leland Stanford University, and he finds that it is the rare exception when the intelligence of a child is not a good indication of its ability later in life.

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DO YOU KNOW THAT-

About five-sixths of the world's oysters come from the Atlantic coast of the United States.

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The pogonip is a fog composed of fine needles of ice which occurs in winter in mountainous regions of the western United States. It is reputed to be very dangerous to the lungs.

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The death rate from cancer has doubled during the last 40 years.

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A pressure of 300,000 pounds to the square inch, which is equal to the pressure exerted by a column of solid rock 50 miles high, makes soft India rubber become so brittle that it will crack like glass.

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DO YOU KNOW THAT-

Engineers are considering the construction of an electric transmission line 700 miles long for carrying power from the Victoria Falls of the Zambesi to the mines at Johannesburg.

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The word "gas" was invented by the Flemish chemist Van Helmont, who lived from 1577 to 1644.

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There were 879 women studying medicine in the medical colleges of the country last year, or 61 more than in 1919-20. They comprised 5.9 per cent. of the medical students.

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According to recent investigations in Germany, the odor of fresh earth, especially noticeable when the soil has just been ploughed up and the moist clods are exposed to the air, is due to certain minute fungi belonging to the group of the so-called "thread bacteria."

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DO YOU KNOW THAT-

The world contains about 140 grams of prepared radium, of which more than half was produced by a single American chemical company.

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It is never possible to be sure that a volcano is "extinct." Before the famous eruption of 79 A.D. Vesuvius had shown no signs of activity for centuries and a forest was growing in its crater.

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Concrete houses in Germany are being built in one operation by pouring in slag concrete in at the highest point of the wooden forms that are erected for the whole building.

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Yellow fever has been completely eliminated from Guayaquil, Ecuador, where it has been prevalent for generations. In 1842 half the population of the city died of this disease, and there were from 200 to 500 cases every year until the campaign of extermination was begun in 1918.

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DO YOU KNOW THAT-

The smallest paper-making machine in the world, which is only eight and a half feet long and three tons in weight and which can be placed on three ordinary library tables, was recently exhibited at Chicago.

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It is estimated that there are 3,000,000 lepers in the world, of whom 2,000,000 are in China.

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Tropical cyclones are called hurricanes in the West Indies, typhoons on the China coast and baguios in the Philippines.

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Several kinds of insect were eaten by the ancient Hebrews, Greeks and Romans. Fabre, the French entomologist, once tried a dish of cooked cicadas but found them unpalatable.

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DO YOU KNOW THAT-

A remarkable and inexplicable fact about the cuckoo's eggs is that they very commonly resemble the eggs of the bird in whose nest they are laid. Of 765 cuckoo eggs in the Berlin Natural History Museum, 575 strikingly resemble the eggs of the foster parent in color and marking.

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The geophone, an underground listening device developed during the war, has been adapted for use in mines, where it will serve to locate entombed miners after a disaster and determine the position of fires.

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Efforts to "square the circle" date back to remote antiquity. The problem is discussed in the oldest mathematical document extant, the Rhind Papyrus, the date of which is about 2,000 B.C.

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Air that has been exhaled contains about seventy per cent. of the suspended dust particles it contained when it was breathed, tests made in London show.

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