RADIO

New Radio "Mirror," 35 Miles Above Earth, Found in India

Ionized Region Much Lower Than Previously Known Layers May Cause The Fading of Broadcast Signals

A NEW layer of ionized air molecules which may strongly absorb radio waves in the ordinary broadcasting region has been found at a height of thirty-five miles above the earth's surface.

Known as the "D" layer, the zone is some fifteen miles above the top of the much-discussed stratosphere. Yet it is only a little over half as high as any previously recognized radio zone such as the "E" layer at 60 miles altitude. Other radio layers are the F_1 region at 110 miles altitude and the F_2 layer at 145 miles height.

First suggested by Profs. E. V. Appleton and J. A. Radcliffe, British scientists, in 1930, the "D" layer has just been found in experiments performed by the Indian scientist, Mitra P. Syam, of the Wireless Laboratory, University College of Science at Calcutta. (*Nature,* June 7)

Chief characteristic of the new "D" layer is its property of strongly absorbing long radio waves and its permitting penetration by waves below a definite wavelength.

Reflection of radio waves off the "D" layer appears to be a rare happening, Mr. Syam reports, which occurs only when its ordinarily diffuse boundary becomes sharp.

In reply to inquiries about the "D" layer, radio experts of the National Bureau of Standards said the discovery was of wide interest because of the possibility that it may explain the occasionally poor transmission of ordinary broadcasting waves during the day time.

For no known reason radio waves in broadcasting range seem sometimes just to disappear. While yet unaware of the details of the report by Mitra Syam to *Nature* the government scientists suggested tentatively that the strong absorbing power of the "D" layer for long waves might account for this known disappearance.

Science News Letter, June 15, 1935

FIRST "TAME" GRANDCHILD

Peter, one-month-old chimpanzee, is here shown as he was photographed by Dr. Robert M. Yerkes, of the Yale Laboratories of Psychobiology. His birth and survival are of great importance to scientists because he is the first known offspring of an ape who was herself born in captivity.

ZOOLOGY

Baby Chimpanzee Is First Born To Captive-Born Mother

ANNOUNCEMENT: Mr. Bokar and Mrs. Cuba Chimpanzee announce the birth of a baby son, Peter, on April 11, 1935. Weight: four pounds. The mother was formerly known as the daughter of Jim and Mona of Havana, Cuba.

Such an announcement, but worded very differently, appears in the dignified print of the scientific journal *Science* (June 1). It is of great interest to scientists because young Peter is the first known offspring of an ape born in captivity. He is the first "tame" grandchild.

Cuba, the mother, is the first of the man-like animals for whom a complete scientific record is available of her birth, the age at which she became an adult, and her treatment of her infant son.

This birth at the Yale Anthropoid Experiment Station, Orange Park, Fla., marks a mile-stone in the building up of a colony of animals whose whole history is known to science, and who will provide standardized laboratory material for the scientists who wish to use them for biological or psychological research. It is the hope of the station's director, Dr. Robert M. Yerkes, who makes the announcement, that within a few years every animal in the colony will have a complete record available of birth date, ancestry, and developmental history.

Chimpanzees mature somewhat earlier than man, Cuba has demonstrated. She became physically an adult when she was just over seven years old, in April, 1933. The next month she was given her mate, Bokar, a young male believed to be about eight years old. By August, 1934, when she was just eight years, five months old, Cuba was expecting her son. Peter was born on April 11, 1935, eight calendar months later, a full-term healthy infant who had a before-birth lifetime just about one month shorter than that of man.

Cuba is not a good mother. She held her baby awkwardly, usually grabbed in one hand. She would not allow him to cling to her as baby apes do in the wild. She would not nurse him. Instead she treated him much as she might any strange object which interested, puzzled and annoyed her.

Overnight the scientists allowed Cuba to keep the baby, watching them from time to time until morning came. Then they took him away from her so that he might not be killed by her neglect or abuse. She did not seem disturbed by the separation.

And Peter got along very nicely without his mother. He was fed a diet such as any human infant might enjoy. Evaporated milk, irradiated with the sunshine vitamin, corn syrup, water and lemon juice. He took it readily enough from the bottle and throve from the first.

Although the parentage of Peter's mother is certified to by scientific records, his father's ancestry is unknown. Bokar's birth was not witnessed. He was brought from French Guinea to the Yale station in 1930 by Dr. Henry W. Nissen, and it was then estimated that he must have been born about 1925.

Cuba, her mother Mona and her fath-

er Jim, were for many years members of the Abreu primate collection in Havana, and were presented to the Yale station in 1931 by Pierre Abreu. Jim, however, then about 31 years old and considered unsuitable for breeding, was given to the Philadelphia Zoological Garden.

Of Peter's birth, Dr. Yerkes says that it is the prologue to a story which it will require decades to complete, whose plot features the breeding and other shaping of chimpanzees to specification and the animal's standardization for use as material for research.

"Instead of keeping the animal as it comes from the wild, we purpose to fashion it to maximal usefulness as an experimental object," Dr. Yerkes said.

Science News Letter, June 15, 1935

PHYSICS

New "Yardstick" Suggested To Check Earth's Motion

Prof. Compton Reports Daily Variation in Cosmic Radiation Is As Expected From 669,600 M.P.H. Speed

THE "strong" possibility that science has a new yardstick with which to measure the earth's motion relative to the rest of the universe was conservatively announced by Prof. Arthur H. Compton, Nobel Prize winning scientist. (*Physical Review,* June 1)

The yardstick is the difference in intensity of cosmic radiation which should result from the earth's motion through space, providing cosmic rays originate outside the galaxy of which the earth, sun and the myriad of visible stars are a part.

Reporting in a paper prepared jointly with Dr. Ivan A. Getting of England's Oxford University, Prof. Compton states that existing cosmic ray intensity measurements show a daily variation of just the anticipated type. Prof. Compton, University of Chicago professor, has been visiting professor at Oxford University during the academic year now ending.

Best checks on the earth's motion through space indicate it is rushing along, like a speck of paint on the spoke of some giant wheel, with a speed of 186 miles a second, or 669,600 miles an hour.

Because of this enormous speed, calculation shows that cosmic ray intensity on an unmagnetized earth at sea level ought to be a little over one per cent. greater on the earth's front side than on the back.

Actually the earth is magnetized and by taking this into account it is computed that the daily variation of cosmic ray intensity ought to be only one tenth of one per cent.

Moreover, the maximum effect ought to appear every twenty hours and forty minutes based on star (sidereal) time.

Already, Dr. Compton reports, measurements by Prof. Hess in Germany over a period of a year suggest agreement with calculated cosmic ray intensity curves.

"Though existing data are not of sufficient precision to show the difference," Dr. Compton says, "the predicted effect is of sufficient size to be measurable with some precision by using the more refined meters now in use.

"While we must wait for such measurements before we can consider the effect due to the rotation of the earth's galaxy as established, the agreement with the predictions . . . . gives strong presumption in its favor.

"Its existence (the daily variation of cosmic ray intensity) would imply that an important part of the cosmic rays originates outside of our galaxy. If its magnitude is found to be as great as we have predicted, it will imply that practically all the cosmic radiation has an extra-galactic origin."

Science News Letter, June 15, 1935

Soviet scientists are preparing an atlas of world agriculture.

GEOGRAPHY

Geographer Protests Chaos Of Old and New Names

THE BUSINESS of re-naming countries and cities of the world is becoming so confusing to many persons, that one professor of geography is moved to protest the present chaos.

News readers and geography students have dutifully learned to recognize the cities that prefer to be called Oslo, Istanbul, Peiping, and Marseille, rather than the old, familiar names Christiania, Constantinople, Peking, and Marseilles.

But Warszawa, s'Gravenhage, Firenze, and Praha are harder. And why? Simply because some of the very editors and authors who have shifted to new names for some places shy away from others, and continue to write of Warsaw, the Hague, Florence and Prague.

Protest, and several practical suggestions, are offered by Prof. Eugene Van Cleef of Ohio State University. (*Science,* May 17).

Pointing out that students are handed text books, atlases, and other reference works which show no accord regarding foreign names, Prof. Van Cleef continues:

"One large commercial atlas shows no old names. Naturally students are bewildered and ask which one of these is correct. They may sit in courses offered by several different instructors, among whom there is no agreement as to the proper form, thus giving rise to further confusion."

Aside from the Soviet Union, which has introduced many names actually new, the "new" names are mostly not new at all, Prof. Van Cleef points out. Post-war nationalism has resurrected a good many of these old-new names. In addition, natives of some countries have begun to request international use of the country's name, without translation.

Decisions Not Known

The U. S. Geographic Board and a British committee have passed upon spellings of foreign place names. But, says Prof. Van Cleef:

"Their deeds are relatively little known among the mass of people, including great numbers of teachers. It is one thing to make these decisions, but quite another to disseminate them."

He suggests, as a remedy, repeated publicity in the public press, to be sought by these organizations regarding their conclusions. All map publishers might also be enlisted to work with them, to the end of establishing common usage of a single form for "each political or natural geographic phenomenon of the earth."

This geographer further suggests that, until the new names become commonplace, they should be written with the old name following in parenthesis. Chicago tried this system, when it changed the house-numbering system, and despite fears that the two numbers—the old one in parenthesis—would be confusing, the double system did the work.

Science News Letter, June 15, 1935