

caustic potash lye, and gives with acetic acid a salt stable in air. From silica, aside from its solubility in acids, because it can be dissolved again from the ignited carbonate in the wet as well as in the dry way . . . Its reaction with carbonic acid differentiates it from zircon, not to mention its taste and the crystals of its neutral salt. It cannot be confused with strontia, which forms a most difficultly soluble compound with sulphuric acid, and one capable of crystallization with nitric and muriatic acids. Also it does not correspond especially with *Australerde*, which can be dissolved in no acid except muriatic, and in that not without boiling. It thus takes its proper and deserved place in the system of natural elements, as a simple and independent earth.

It must therefore be named, and it seems most fitting that it should be named from the place where it was first discovered, because neither the name of the discoverer nor that of the mineral are sufficiently short for forming a name for common speech. But it can be called Ytter-earth, in Latin Yttria,

which is free from all ambiguity and confusion both in meaning and spelling. The mineral itself should no longer be called pitchstone, for that has an entirely different meaning, since substances dug up elsewhere are so named, but it should be called *Ytterstein*.

In regard to the opinions as to the use of the discovery of a new earth, I cannot quite agree with Prof. Gadolin, for Yttria has such clear and definite properties. By complicated and troublesome investigation it may be possible at another time to achieve much understanding and profit. Is baryta not indispensable now in manufacturing many substances, and necessary in analysis, and what need does it not fill in medicine! That Yttria, whose acid solutions have such a characteristic taste, may also find a use in medicine is perhaps not such an untruthful possibility.

What may be discovered through further research upon the nature of this earth and its behavior toward other bodies, I leave for the future to show.

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PHYSICS

Gap in Einstein Theory Filled By New View of Physics

A GREAT defect in the Einstein relativity theory, till now ignored, has just been illuminated in the Orient by Dr. William Band of the Yenching University, Peiping, China. Dr. Band's new theory will be announced in a communication in the next issue of the *Physical Review* of the American Physical Society.

The two great branches of modern theoretical physics, relativity and the new quantum mechanics of atoms, until now working independently, may be harmonized by Dr. Band's new system. At present either planets or atoms act in the same way, according to the relativity theory of Einstein. Actually the facts of atomic physics on which the quantum theory is built are in complete contradiction to this idea.

"Relativity," says Dr. Band, "requires an added postulate over and above the postulates made by Einstein at the foundation of the theory."

This additional assumption is that the events of which the world is composed occupy some space and time, and are not infinitely small "point-events" as required by Einstein.

Otherwise, stated Dr. Band:

"General relativity is logically unsatisfactory because it bases measurement on infinitesimals and absolute infinitesimals do not exist. In applying the relativity to experience, we have to decide arbitrarily what shall be small."

Actually the small scale structure of matter does not really allow this choice: electrons and atoms are things having perfectly definite size.

Dr. Band's daring attempt to solve this fundamental problem is based on the work of Prof. A. N. Whitehead, professor of philosophy at Harvard University. Prof. Whitehead, himself a mathematician, has devoted much thought to constructing a theory of nature that will include all branches of science within its scope. This is the first attempt to bring Whitehead's concepts into the form of a definite physical theory.

The speeding atoms, electrons and light waves, that are spoken of together in the language of atomic physics as "wave-particles" are still further transformed in the new scheme emanating from China. "Transmitted possibili-

ties," Dr. Band calls them as if to emphasize the increasing immateriality of what was called the physical world.

In agreement with this Dr. Band finds that "the existence of the particle is by no means a necessity." In conclusion, he decides that "it is possible by recognizing a logical weakness of relativity to deduce from the most natural additional hypothesis to remove this weakness, the essential basis of the new quantum theory."

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MEDICINE

Reversed Blood Flow Relieves Gangrene

AN UNUSUAL case in which the flow of blood in a patient's hands and feet has been reversed for twenty years has just been reported to the American Medical Association by Dr. Bertram M. Bernheim of Baltimore.

The operation was performed to relieve gangrene which developed as a result of Raynaud's disease, an ailment affecting the smallest arteries and veins. When circulation in these is affected, as in Raynaud's disease, the tissues supplied by them do not get proper nourishment and die.

To correct this condition, Dr. Bernheim performed an operation linking an artery to a vein in the patient's left leg. The blood, which could not get down the diseased artery to the left foot and toes, was able to flow down the vein to the foot. Normally, of course, blood flows out from the heart in the arteries and back through the veins. This reversal of blood flow was successful in relieving the gangrene and pain of Raynaud's disease in the left foot. Later, when the other foot was attacked, and still later when the disease began to affect the hands, operations were performed to reverse the circulation in these members.

The patient, who was 26 years old at the time of the first operation, is now about 45 and in excellent health generally. Dr. Bernheim found on examination nearly 20 years after her last operation. However, pain has returned and gangrene set in again in the remaining toes of the feet and in one finger. The reason for this cannot be determined, nor can the final outcome of the case be predicted, Dr. Bernheim stated. The openings from arteries to veins in the arms appear still to exist and have probably prolonged the patient's life and health for many years.

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