sulphur," appears to be directly proportional to the degree of hypoglycemic activity. In other words, the higher the amount of sodium carbonate sulphur present in a given preparation the greater is its potency. In our paper above referred to will be found a table of chemical analyses and biological measurements in proof of our statement that the hypoglycemic activity of insulin goes hand in hand with the amount of easily split-off sulphur. Another point worthy of notice is that the total sulphur of an insulin preparation also rises with increasing purification.

It has been known for some time that insulin is readily inactivated by alkali and that even boiling for ten to fifteen minutes with so weak an alkali as N/10 Na_2CO_3 suffices to deprive an insulin preparation entirely of its sugar-lowering property. But it has not hitherto been shown that an alteration in the affinities of the element sulphur occurs coincidentally with this inactivation. Is there a causal connection between the chemical and biological events? The results of our work lead us to believe that this unstable sulphur is an integral part of the insulin molecule and that the alteration in its condition consequent upon heating with sodium carbonate bears to the destruction of the physiological activity of the hormone the relation of cause to effect.

It is not our purpose at this time to discuss the mode of action of insulin, but we do, however, wish to point out that if the labile sulphur is a pivotal element of insulin, then we possess in it a sulphur compound of high specificity, and one that plays a paramount rôle in the normal metabolic changes which the carbohydrates undergo during their utilization in the animal economy. In this connection, too, the question suggests itself as to what extent, if any, the islets of Langerhans are dependent upon the presence in our food of a special labile sulphur compound, a precursor indispensable for the elaboration of the hormone, in the absence of an adequate supply of which pathological alterations in the cells of the islets of Langerhans would take place. Should a connection of this nature be ultimately established, there would come to light an important and hitherto unrecognized etiological factor in the causation of diabetes mellitus.

Up to the present it was not possible to give an explanation of the mechanism of the physiological inactivation of insulin by weak alkalis. Our findings seem to us to correlate for the first time certain chemical properties of insulin, more especially the hitherto unsuspected extreme lability of its sulphur, with its biological activity, and we hope that our observations may serve as the basis of a method for the chemical assay of the hormone—a method of assay which is urgently needed as an adjuvant, if not as a substitute for the present costly, time-consuming and unsatisfactory rabbit method. The action of very dilute acids at various temperatures upon highly purified preparations of insulin will also lead to the discovery, we hope, of chemical methods for evaluation.

It is now only a matter of time, we believe, when this unstable hormone must yield to the investigator the secrets of its composition and the rationale of its operations within the body. A host of investigators have already made many significant and valuable contributions in reference to the influence of insulin upon the various stages of carbohydrate metabolism, but an explanation of the biochemical mechanism involved in the action of the hormone (at strategic points and moments, so to speak) must wait upon the more definite information along chemical lines such as that referred to above.

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EXPEDITION OF THE CALIFORNIA ACADEMY OF SCIENCES TO THE REVILLAGIGEDO ISLANDS

As already announced in SCIENCE (issue of April 3, 1925), the California Academy of Sciences recently sent an expedition to the Revillagigedo Islands for the purpose of studying their fauna, flora and geology. The Secretary of the Navy detailed the U. S. S. *Ortolan* for the purpose, and the expedition sailed on April 15 from Mare Island Navy Yard.

On the way south the *Ortolan* touched at San Diego to receive on board three Mexican biologists, whom the California Academy of Sciences had invited to be its guests on the cruise. They are Professor Francisco Contreras, director of the National Museum of Mexico, Dr. Octavio Solis, director of the Botanical Garden at Chapultepec, and Professor José Maria Gallegos, chief of botanical explorations, National Museum of Mexico.

From San Diego the expedition proceeded to Guadalupe Island, which lies about 180 miles to the southward, thence to Alijos Rocks, about 200 miles further south. Large and valuable collections were made at each of these stations.

From Alijos Rocks the vessel proceeded direct to Clarion, the most westerly of the Revillagigedo group, where several days were spent making collections. The other islands of the group—Roca Partida, Socorro and San Benedicto—were then visited in turn, and as

thoroughly explored as time and facilities would permit.

Dr. Hanna, who is in charge of the expedition, sends in by wireless to the academy weekly reports of the progress of the work. These reports indicate that the expedition so far has been very successful and that excellent collections of birds, fishes, reptiles, plants and in other groups have already been secured.

From the Revillagigedos the expedition went to the Tres Marias Islands, near Mazatlan, where it is now (May 23) engaged in biological studies. From the Tres Marias the *Ortolan* will proceed northward, stopping at a number of places in Lower California, and reaching San Francisco on or about June 22.

The Revillagigedos are a little known and rarely visited group, consisting of five volcanic islands varying in size from Socorro, which is about 100 square miles in extent, to Oneal Rock, which is little more than a menace to navigation. The others are Clarion, San Benedicto and Roca Partida. Much of the coast of these islands is "iron-bound," and, viewed from the sea, is very picturesque. Pounding waves hammer out caves and arches from the faces of the cliffs, and, in so doing, shatter themselves into cascades of foam. Harbors are few, not too well defined and afford protection according to their position and the direction of the seasonal winds. Even within the harbors the heavy surf makes landings in small boats difficult, save in the calmest weather.

These islands are so poorly provided with natural attractions that the obstacles to landing seem unnecessary. Aside from the rather heavy growth on the weather side of Socorro, the red soil supports but a scanty vegetation. An abundance of cacti and hooked awns seems to exist for the discomfiture of humans, and beds of broken lava and hills of volcanic ash form almost insuperable barriers to cross-country traveling.

Unattractive as these islands appear to man, they are, nevertheless, the paradise of myriads of sea birds. Insular forms of land birds, reptiles, mollusks and plants also occur here. Seal rookeries apparently existed—perhaps still do—on Socorro and San Benedicto. The surrounding seas teem with fish and reports of numbers of whales accompanied by young bear witness to a breeding ground in the vicinity. Indeed, a certain ocean area not far distant is known as the "cow pasture."

Because of the peculiarities in the biota, the Revillagigedos are of special interest to naturalists, and repeated visits have been made for the purpose of obtaining specimens of their animals and plants. The history of these expeditions is punctuated by accounts of wrecked vessels, swamped boats, hairbreadth escapes and lost collections. Each disaster, however, has but proved an incentive for a fresh undertaking.

Although the group was discovered by Hernando de Guxalvo in 1533, the natural history seems to have received little attention until Captain James Colnett visited the Pacific coast in the interest of the whale fisheries. In September, 1793, he reached the first island of the group which he named in honor of the Mexican viceroy, Revillagigedo. With a view to making "Socorro" more than a meaningless name, Colnett's first step was to have European garden seeds and sprouted cocoanuts planted there. Apparently this move in nowise upset the balance of nature, for upon his return to the island three months later the nuts had decayed and there was no sign of sprouted seeds. Colnett made no attempt to visit the interior of Socorro, but assumed the existence of a freshwater lake in the hinterland, because of the number of teal seen in flight. The presence of other species of birds was noted, and the insects, mollusks, reptiles and crustaceans commented upon. Fish were reported to be numerous, but few could be obtained for food because of the voracity of the sharks.

In the course of a voyage in the service of a New England trading firm, Captain Benjamin Morrell called at Socorro in May, 1825. His stay was brief, but sufficiently long for him to take a census of the pinnipeds on the island.

The *Sulphur,* and her consort the *Starling,* made serious attempts in 1837 and 1839 to check the positions of the various islands and to eliminate from the charts names of some that were non-existent; for, in the course of time, this group of four islands and attendant rocks had grown into two groups, each comprising more islands than the whole archipelago possessed. These errors are not entirely a thing of the past, as maps of quite recent date bear the names of wholly mythical islands. A few specimens also were added to the natural history collections that had been made elsewhere.

The bird life of the Revillagigedos was first seriously studied by Colonel Andrew Jackson Grayson, who paid two visits to Socorro, the first in 1865, the second in 1867. Shortage of provisions curtailed his first stay, and his plans for the second were wrecked with the vessel upon which he came. During his second visit he was able to add considerably to the number of specimens he had previously secured before the arrival of a rescue ship. The difficulties experienced in embarking, however, forced Grayson to leave behind all his collections except the bird skins, one land shell and one lizard.

The abundance of fishes in the adjacent seas had attracted the attention of all visitors to the group, but Lieutenant Henry E. Nichols, of the *Hassler,* was the first to make a collection. In 1880 he visited both

Clarion and Socorro and secured twelve specimens comprising nine new species.

The six days of the 1888–89 cruise of the *Albatross,* allocated to the work in these islands, was sufficient to permit calls at Clarion, Socorro and San Benedicto. From each of the islands interesting collections of birds, reptiles, plants, mollusks, fishes and insects were secured by Dr. Charles H. Gilbert, the naturalist on the *Albatross.*

In 1897 Mr. A. W. Anthony greatly increased our knowledge of the bird life of the group. During the three weeks he devoted to the work, large collections of birds were made, and some invertebrates and plants taken.

The Webster-Harris expedition, of which Lord Rothschild was the moving spirit, made a brief call at Clarion in 1897 and obtained small series of birds, reptiles and insects.

The first expedition sent by the California Academy of Sciences to the Revillagigedos spent seven weeks in 1903 in making a survey of the islands. Collections of birds, fishes, reptiles, insects, mollusks and plants were made, but they were destroyed in the earthquake and fire of 1906 before the mass of the material had been studied. Members of this party were apparently the first to reach the summit of Socorro. Evidence pointed to volcanic activity in the not too distant past, as many hot springs were discovered near the peak.

The expedition sent to the Galapagos Islands by the California Academy of Sciences in 1905 called at San Benedicto, Socorro and Oneal Rock, securing a few specimens from each.

In 1916 the tuna investigations conducted by the U. S. Bureau of Fisheries took the *Albatross* into those waters. The small collections of sea birds and invertebrates obtained were turned over to the California Academy of Sciences.

It is now hoped that, with the facilities at its command, the *Ortolan* expedition will obtain the material needed to fill the gaps in the existing collections and so make possible a thorough understanding of the natural history and faunal relations of the Revillagigedo Islands.

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SCIENTIFIC EVENTS

THE TWO HUNDREDTH ANNIVERSARY OF THE RUSSIAN ACADEMY OF SCIENCES

THE Russian Academy of Sciences at Leningrad, founded at the end of the reign of Peter the Great, has completed its program for the celebration of its two hundredth jubilee anniversary in September. Prominent scientific men from a score of countries will attend. The program, extending from September 5 to 14, includes sessions at both Leningrad and Moscow, gala performances of the opera in Leningrad and of the Moscow Art Theater in Moscow, banquets tendered to the visitors by both cities and a state breakfast in the Kremlin. Leading American universities and scientific societies have been invited to send representatives.

A statement in regard to the academy sent SCIENCE from the New York Bureau of the Russian Telegraph Agency reads:

The academy was originally founded by Peter the Great in 1725. It was the Russian expression of the general scientific development of the eighteenth century, particularly in physics and mathematics. The German philosopher and mathematician Leibnitz drew up its constitution. Other German scientists organized various departments of research. In its early days its greatest contribution was in geography. It explored and charted immenses stretches of territory in Russia. During the nineteenth century the academy's work won the esteem of west European scientists, who invited the Russian academy to join the International Association of Academies.

Until the revolution, the Russian academy was dominated by the Czar and the nobility. It suffered from the general lack of system characteristic of Czarist Russia. Attempts to systematize its work were begun in 1912, but were interrupted by the war.

The chaos which attended the Russian civil wars wrought great hardships on the scientists. They were exposed to cold and famine. They had no means for carrying on research, publishing books and magazines or taking care of institutions. The laboratories were deserted for lack of fuel. However, the defeat of the counter-revolution and the raising of the allied blockade enabled the Soviet Government to come to the assistance of the scientists. Early in 1921 a deputation from the academy visited Lenine and laid the situation before him. Subsequently the Soviet Government appropriated money for the restoration and extension of scientific work.

The academy has since then restored libraries, collections and museums disturbed or neglected during the civil war. The academy's library, which before the war contained 3,000,000 volumes, has been increased to 4,500,000 volumes. The collections of the zoological, ethnographic, mineralogical and Asiatic museums have been increased to such an extent that the Soviet Government has had to enlarge their headquarters, making special appropriations for equipment and repairs.

With this assistance the Russian Academy of Science has been able to convert the old physics laboratory into the Physico-Mathematical Institute, with special workshops for making precise instruments. Most of the museums have been doubled or trebled in size. The seismographic station, at Pulkovo, which burned down in 1920, has been replaced by a new one. The chief Russian seismographic stations have been restored and contact established with seismographic stations throughout the world.