This is the remedy. In a laboratory where such a spirit is always in evidence, the methods and devices become of secondary importance and the emphasis is placed upon weightier matters. This spirit will be maintained only by eternal vigilance. Is this possible other than by means of active research?

The needed reform in laboratory instruction in physics does not demand radical changes in equipment, but it insists that the instructor shall have the spirit of the science, and that he shall minimize the importance of method and magnify the real function of the laboratory. It is useless to claim that the remedy lies in a particular set of experiments or in the proper equipment. Any method or any equipment will eventually enslave the teacher if it is permitted to do so. The remedy lies wholly in the attitude of the instructor. The teacher who has not the true spirit of research can not obtain freedom from slavery to method.

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A NEW GAS VOLCANO IN TRINIDAD

The daily press recently reported that a new island had been thrown up near the coast of Trinidad, with accompanying fire and explosions. This report and the statement appearing in numerous places that the eruption was volcanic has strengthened the impression, already somewhat current, that Trinidad is a volcanic island forming part of the same chain as Martinique, St. Vincent and others of the Windward Islands. There is, however, no true volcanic activity in Trinidad and no volcanic rocks either recent or ancient are known there. The island is formed of highly folded sedimentary and metamorphic strata, and is more properly to be considered as a portion of the South American land mass. The recent eruption near its south coast was due to the sudden escape of a large quantity of gas from the strata that form the submerged coastal plateau, with the consequent ejection of the mud and other materials which had hitherto confined the pressure. Eruptions of this type on a small scale are constantly going on in southern Trinidad, forming the many mud cones and craters to be seen there, and occasionally large outbreaks such as this latest one occur. In all cases the force at work is escaping gas which rises from the gas-bearing sandy and clayey strata, bringing with it fine sediment and salty water derived from these beds.

I visited numerous gas volcanoes in this portion of Trinidad during October but left there just before the recent eruption took place. Mr. Jefferson D. Davis, of Port of Spain, in a letter dated November 6 writes as follows:

> On last Saturday (Nov. 4) land was seen to rise from the surface of the ocean 3 miles southwest of Erin. . . . The gas . . . soon took fire, and the flames must have gone to an enormous height, because they were seen from Port of Spain to shoot into the clouds, and Erin is approximately fifty miles from this place. The country was lit up for considerable time, and great consternation prevailed among the natives. . . . The governor of the colony and a party of officials with a number of prominent people from this place went down yesterday to see the phenomenon, and found a piece of land about three acres in area, about thirty to forty feet above sea-level, in the center of which was a crater. The ground seemed to be the ordinary blue mud, but was very hot, consequently baked dry and hard. Some of the more adventurous visitors went on to the land and walked about for a while, and took home some samples of the clay. Large volumes of gas were coming from the crater at this time, but there was no fire. We learned to-day by telephone that it has taken fire again.

It is also reported that four distinct detonations were heard from Port of Spain after the island had been formed and that the fire continued burning until Sunday morning. Mr A. C. Veatch, formerly of the U. S. Geological Survey, was on board ship at Brighton, Trinidad, just about to sail for New York at the time. He informs me that his notice was suddenly attracted by a great flame that shot up into the sky just at dusk, at ten minutes before six, Saturday evening. Every one thought it was an oil or gas well on fire. With

the first puff the flame rose as a brilliant mushroom-shaped mass, which immediately changed its form to a straight jet of fire that must have risen to a height of at least 1,000 feet. No noise whatever preceding or accompanying the fire was to be heard from Brighton, which is across the low hills within fourteen miles of the place where the new island was formed. The fire disappeared below the horizon in about five minutes, leaving a cloud of smoke that drifted away. No light was to be seen in the sky the rest of the evening, which makes it certain that the flame either became reduced to a very small size or died out entirely.

The point at which this new gas volcano burst from beneath the sea is about two miles off the south coast of Trinidad. The water is shallow and banks are shown in the vicinity on some maps. On one of these banks asphalt is reported to exist. It is likely that gas springs and mud cones have previously existed on the sea floor in the vicinity. The vent lies along the eastward extension of an east-west line of active gas volcanoes and oil springs that traverses the southeastern tip of Trinidad. This line is mapped by Mr. Cunningham Craig, formerly government geologist of Trinidad, as an anticline. Another assumption that may be considered equally tenable is that the gas volcanoes and asphalt cones may follow a zone of faulting. The strata are highly tilted and contorted and afford little definite evidence as to the character of the structural line. The Columbia volcano, the largest of the gas volcanoes in this belt, has formed a broad mound many acres in extent and 50 or 70 feet in height. An explosion had occurred there just a few days before my visit, in the latter part of October, and thrown up a mass of mud around the crater that increased the height of the summit several feet. The sides of this cone as well as of some others in Trinidad, notably the one called "The Devil's Woodpile," are strewn with pebbles and rock fragments that have been ejected from a great depth.

A point of unusual interest regarding the late eruption is that the gas took fire. The reports so far received give no details bearing on this point, but it seems unlikely that the original ignition took place through human agency. If it did not the phenomenon is one which has seldom if ever been recorded before. Two ways suggest themselves in which the gas might conceivably have become ignited through natural causes. One way is that sparks might have been produced by the friction of boulders against each other as they were shot out with the gas. Cases have been reported to me by oil men in which sparks were formed by boulders, projected under great gas pressure from wells, striking the casing and tools, but I have heard of no case in which the gas was lighted. Another supposition is that electric sparks might have been generated similar to those observed in the vapor clouds emanating from Mount Pelée at the time of its great eruption.

ROBERT ANDERSON

THE FUTURE OF THE LONDON ZOOLOGICAL GARDENS

FROM time to time suggestions have been made respecting the transference of the menagerie of the Zoological Society of London to a more suitable site; and naturally when the fate of the Crystal Palace has been engaging the attention of the public, it has been urged that to make it the headquarters of the Zoo would solve the difficulties of both institutions. Certainly the clay soil at Regent's Park is not specially suitable for animals, although it is not as serious a disadvantage as is sometimes supposed.

A chief difficulty with animals in confinement is that the ground on which they are placed rapidly becomes contaminated with organic refuse, and so forms a suitable nidus for harmful bacteria. Whatever the soil may be, it is necessary, in a majority of cases, unless an enormous area is available, to cover it with an impermeable surface; and this treatment is at least as urgent in the case of sand and gravel as in that of clay. The present area of the gardens in Regent's Park is about