1639 to Galileo's death in 1642. In 1639 Viviani was seventeen years old.

No account by Galileo himself is to be found in the Edizione Nazionale of his works, if the elaborate index is to be trusted. Further as Gerland, "Geschichte der Physik," p. 316, 1913, points out, Galileo in his treatise "De Motu," which dates from the time of his readership in the University of Pisa, cites experiment from a high tower as proving that wood at the beginning of its fall moves more rapidly than lead, but that a little later the lead will pass the wood and will precede the wood by a great space. Galileo further states, "and on this I have made experiment frequently."[4]

Renieri (born in 1606, knew Galileo from 1633 to 1642 and during that time wrote Galileo at least sixty letters) wrote a letter to Galileo dated March 13, 1641,[5] in which he gives an account of some experiments performed by Renieri from the leaning tower of Pisa. Renieri dropped a sphere of wood and one of lead the same size; on reaching the ground the lead was three "braccia" ahead of the wood. He also dropped a cannon ball and a musket ball and on reaching the ground the cannon ball was a palm ahead. Renieri makes no reference to Galileo's experiments, which is difficult to explain except on the ground that he had never heard of them.

Realizing the slippery nature of historical deduction, I draw no conclusion except this, that we do not know exactly what experiment Galileo performed from the leaning tower.

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THE BOOMING LIZARD OF AUSTRALIA

IN July, 1913, I was hunting in the Cove's River Ranges with two companions—Andrew and John Duncan, of Megalong. We found a black-and-yellow banded monitor lizard about five feet long concealed in a crevice on the face of a wall. We had no intention of injuring him, but out of mischief Andrew Duncan suggested that we should make him yell. I was sceptical, but both men assured me that the lizard could, and would yell under persuasion. On condition that there should be no cruelty, I consented to a demonstration. They laughed at the idea of cruelty. Andrew picked up a stick and began poking the reptile in the ribs and tickling him under the arm. It stood it for a while, merely squirming closer down in the crevice, then, having had enough of it, blew himself out and emitted a most comically doleful bellow that could be heard several hundred yards away. This he did repeatedly until we had laughed ourselves tired. It was funny, on looking back after we had gone fifty yards, to see the lizard stick his head around the corner to make sure that we had really departed.

I have had for the last four years at my hunting-box on the Naltai River, a tame monitor whom I have called "Joseph" on account of his coat of many colors, and who is the interesting companion of my solitude—and incidentally keeps the snakes away. With the above in my mind, I experimented on him. I found him camped under the bench beneath the window, and irritated him with the end of a stick. He did as the other had done—filled himself with wind and then emitted it in a prolonged bellowing groan. By the way, our "bookbook owl" does much the same thing. He fills himself nearly to bursting in a succession of gasps, and then says "Hoo-hoo hoo" till he has no more breath, then fills up again.

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QUOTATIONS

THE BRITISH ASSOCIATION

THE British Association begins its annual meeting at Cardiff to-day. Our correspondents report that the increase in railway fares has not reduced the attendance below that of a fair average, and that the arrangements made for the housing of the visitors and the accommodation of the sectional meetings are excellent. By a useful innovation the daily

[4] Op. Ed. Naz. I., 334.
[5] Op. di. Gal. Ed. Naz., 18, p. 305.

Journal has been replaced by a single issue covering the whole meeting. Clearly it will be a strenuous time. To-day eleven of the twelve sectional presidents deliver their addresses, on subjects ranging from the constitution of the stars to the intensive cultivation of gooseberry bushes. The detailed proceedings of the sections in the morning and the afternoon should be full of interest. An announcement is to be made as to the third of the three practical tests proposed by Einstein for his new theory of relativity, two having been already successfully passed. The chemists are to consider the production of alcohol for industrial purposes. The geology of the district and the possible effect of the narrow valleys in provoking feelings of imprisonment and isolation on their thronged population are to engage the attention of the geologists and geographers—unfortunately, in two separate sections. The economists are to discuss decimal coinage, the Danish credit system, and the business side of agriculture, while the agriculturists are busy over the growing of potatoes. The importance of psychology, the mental effects of alcohol, and training in citizenship are all on the day's program. In the evening, Professor Herdman, president-elect, will be inducted into the chair, and will discourse on Oceanography and Fisheries. The following days, if not quite so arduous, are at least to be well filled. Since the Association held its first meeting, at York in 1831, there has been a great advance in science, and an increasing specialization of its branches. At first there were only six sections, and the next year, at the Oxford meeting, these were reduced to four, dealing respectively with mathematics and physics, chemistry, mineralogy and electricity, geology and geography, biology. By 1855 they had grown to seven; they are now twelve, and a proposal for still further sub-division is to be discussed. We wonder if it is all gain. The reverse tendency is also at work, and several sections are to combine for occasional joint discussions. There is much to be said in favor of a concentration at the annual meetings on subjects whose problems concern many different branches of science and require illumination from many points of view.—The London *Times*.

SPECIAL ARTICLES

EXPERIMENTS IN THE TRANSPLANTATION OF THE HYPOPHYSIS OF ADULT RANA PIPIENS TO TADPOLES

THE writer has for some time past been engaged in experiments upon the extirpation of the hypophysis and the thyroid glands of tadpoles. These experiments have yielded interesting results. Absence of the thyroid gland wholly prevents metamorphosis while the removal of the pars buccalis of the hypophysis, *i. e.*, all but the posterior lobe brings about the following results:

1. Failure to metamorphose.
2. Retardation of growth in size.
3. A striking change in color from black to a silver white.
4. Lowered resistance to unfavorable conditions.

Experiments in transplanting of the hypophysis were undertaken by the writer two years ago, but failed because of faulty technique, and were for the time being abandoned owing to press of other work. This year the experiments were carried through with surprisingly little difficulty and have given such striking results that it seems well worth while to offer a brief and necessarily rather superficial account of them at this time. These experiments are based on 384 operations upon tadpoles.

It is well known that the hypophysis is composed of four elements: the anterior lobe, intermediate lobe, pars tuberalis, and posterior lobe. All but the last named come from the same embryonic anlage—the portion that has been removed in the extirpation experiments mentioned. For the sake of brevity we shall speak of these as "pituitaryless" tadpoles. For the present work three out of the four lobes—all except the pars tuberalis—were employed. In each case a fair amount of care is exercised to prevent infection but these precautions are in no case perfect. Greatest reliance is placed upon the remarkable resist-