THE *Journal* of the American Medical Association states that in the report of the recent meeting of the building committee of the "University City," the secretary, Don Florestan Aguilar, announced that the bull fight held lately in Madrid for the benefit of the "University City" had cleared 47,500 pesetas. He announced, also, that it had been agreed to include the veterinary school among the buildings of the city. It was agreed that a committee composed of a professor of the veterinary school and an architect should visit the veterinary schools of Leipzig and Munich to collect fundamental principles to be used in the school of Madrid. Those German veterinary schools are considered by the committee to be the best in the world. Señor Aguilar presented the plans for a dormitory in the "University City" for the Spanish-American students. The funds for the building are the gift of Dr. Del Amo. The project is entrusted to Señor Nebot, director of the School of Architecture of Barcelona. It was agreed that the work should begin immediately. Dr. Del Amo D. Gerardo is a physician, formerly of Madrid, who emigrated to Los Angeles. It is estimated that the cost of the work will be 130 million pesetas. The mayor of Madrid ordered that the municipal hospital, which is to be built with three million pesetas left by the Count of Guaqui for this purpose, should be constructed on the land of the "University City" and in connection with the hospital of the medical faculty.

PROTECTING the sea front along the Scripps Institution of Oceanography, University of California, assembly bill 368 has been passed by both houses of the legislature and signed by Governor Young. This bill creates a biological reserve along the shore line of the institution, and prevents all fishing and collection of marine life to a mean low tide depth of six feet, which includes outlying rocky ledges. This action was taken because of the threatened extinction of many kinds of marine animals in these waters.

UNIVERSITY AND EDUCATIONAL NOTES

A GIFT of $2,000,000 has been made by Mr. John D. Rockefeller, Jr., toward a building for American students in the "University City" at Paris.

THE first unit in the two and a half million building program at the University of Tennessee is now in process of erection. The building is for physics and geology, and, with its furnishings, will cost about $200,000. Plans for a building for chemistry are under way, and other buildings projected include a program calling for about $500,000 annually for the next five years.

THE new building for animal biology at the University Farm of the University of California at Davis, built at a cost of $300,000, is nearing completion. It is planned to occupy the building on October 1.

REAR ADMIRAL SAMUEL S. ROBINSON has assumed his new work as the superintendent of the United States Naval Academy at Annapolis, succeeding Rear Admiral Louis Nulton.

PROFESSOR ELMER S. SAVAGE has been named acting head of the department of animal husbandry at Cornell University, succeeding Professor Henry H. Wing, who retired at the close of the academic year.

ACCORDING to the *Journal* of the American Medical Association, Dr. James E. Rush, head of the department and professor of hygiene and public health, University of Kentucky, Lexington, has resigned. Drs. W. Walter Zwick and D. Stanton Ross are also reported to have resigned from the department of hygiene.

DR. ROBERT DONALDSON has been appointed to the Sir William Dunn chair of pathology in the University of London, tenable at Guy's Hospital Medical School.

DAVID REGINALD PIPER MURRAY, of Pembroke College, Cambridge, has been elected to the Benn W. Levy research studentship in biochemistry.

DISCUSSION

THE EARLIEST DYNAMO

I NOTICE that in the issue of SCIENCE of August 13, 1928, Dr. Frederick Bedell, of Cornell University, in alluding to the letter of Dr. H. W. Wiley in your issue of May 25, 1928, says that he quite correctly calls attention to the fact that the fiftieth anniversary of the dynamo should have been held some time ago, and alludes to two French dynamos exhibited at the Centennial Exhibition of 1876. He then goes on to say, "The earliest dynamo made in America, constructed before the importation of any machines from Europe, was operated and exhibited at the same exhibition." He describes the conditions.

Now I am not aware that anybody has ever claimed that the fiftieth anniversary of the dynamo was to be celebrated. At the Franklin Institute meeting of April 18, I took part with others in a celebration, but it had nothing to do with any fiftieth anniversary

of the dynamo. What it really was was the fiftieth anniversary of the pioneer investigations on dynamo machines. It is difficult for me to conceive how this celebration could have been imagined to be a celebration of the fiftieth anniversary of the dynamo itself as a machine. There is evidently a profound misconception somewhere, for which I have myself absolutely disclaimed any responsibility.

A dynamo is a machine for converting mechanical energy into electrical energy. Its prototype was, of course, the Faraday disc experiment, followed by such machines as the Pixii, Saxton, Allen (modified later by Lontin), Niaudet and others. The Faraday experiments were made in 1831; Pixii made his machine about 1832; the Clark machine was made in 1834; the Stohrer machine was made after the Pixii, in 1844. However, they were called magneto-electric machines, but there is no essential distinction between such machines and a dynamo electric machine.

After the Abbé Nollet, the alliance machines were made for producing electric arc light. Knight made, in 1854, the first dynamo of the inductor type, so far as can be ascertained. The Siemens shuttle armature, made by Werner Siemens in 1856, was used in a number of types of commutating dynamos. The Holmes machine, an alternating machine like the Alliance, came in 1857. The Paccinotti, the basis of the Gramme construction of 1870, came out in 1860, and the shuttle armature of Siemens appeared in the Wilde-Ladd, Wheatstone and Varley machines of about 1866–1867.

If the question is supposed to concern the time when the first dynamo in America was made, which, after all, does not seem to be a very important matter, it can be said that Davis's "Manual of Magnetism," the edition of 1842, shows magneto-electric machines of the Saxton and Pixii type as on sale in America. Wilde-Ladd machines using a Siemens shuttle were to be found in collections of electrical apparatus, and modifications of such machines were used by Moses G. Farmer in furnishing the current for exploding charges of powder in blasting and the like by melting a fuse wire by current.

This is a mere skeleton of the case, but shows that there is no such possibility of claiming the earliest dynamo made in America as defined by some particular type. It is unfortunate that the discussion ever arose from a misunderstanding which I have pointed out as to the nature of the fiftieth anniversary held at the Franklin Institute last April.

The *Journal* of the Franklin Institute for July, 1928, Volume XX, No. 1, may be referred to as showing the real nature of the anniversary celebration which was actually held, and which had nothing to do, as stated before, with the earliest dynamo in America. I hope that this statement will clear up the matter.

ELIHU THOMSON

EARLY GRAMME MACHINES

THE number of Gramme machines exhibited at the Centennial Exposition in Philadelphia in 1876 is increasing almost as rapidly as the men in Buckram.

There was a slight error in the notice in SCIENCE for April 13 which indicated that the celebration held in the Franklin Institute was in honor of the invention of the dynamo. In point of fact, it was the fiftieth anniversary of the first scientific test of the dynamo ever made in this country. Some of the scientists who attended this fiftieth anniversary took an active part in the testing of dynamos fifty years before. This is particularly true of Dr. Elihu Thomson and Dr. E. J. Huston.

On June 5, 1928, I received a letter from Professor A. P. Carman, of the University of Illinois, from which I quote the following:

> I went to Purdue as Professor of Physics and Electrical Engineering in 1889, and was much interested in finding that Gramme machine as part of the equipment. My students worked with it for three years while I was at Purdue. My interest in the machine was increased by the fact that we had at Princeton the exact mate of this machine. The Princeton machine was purchased by Professor C. F. Brackett at the Philadelphia Centennial Exposition, and I had heard from Professor Brackett that it was one of the two duplicates which were at the Exposition. I do not think that Professor Brackett knew where the second machine went. I had worked as a student with the Princeton Gramme machine.
>
> I had never heard of the machine which you say was purchased by Professor Barker of the University of Pennsylvania, but there was a similar machine at Cornell University which Professor Anthony had made after the model of the historical Gramme machines which are now at Purdue and at Princeton.

Professor Carman has surely thrown a monkey-wrench into the machinery. In addition to this, he has cited another Gramme machine of which I have had no knowledge.

On June 7, I received an illuminating letter from Dr. Elihu Thomson. He says:

> The celebration held at the Franklin Institute was really limited to the fiftieth anniversary of the first comprehensive tests made on dynamos, in which as many machines as could be gathered together at the time were put through not only photometric and mechanical tests, but the electrical tests. This had not been done before, so far as I am aware, and the results were of considerable value. The very Gramme machine which you purchased for the Purdue University, and which was the one at