The oxalic acid is converted with more or less rapidity into carbonic acid, which escapes, and at the end of the experiment the degree of acidity of the solution indicates the amount of the oxalic acid which has been decomposed, or 'burnt,' to use M. Duclaux's term. The results showed, as was to be expected, that with an overcast sky the chemical action of the sun's rays was much less than on a fine day, but beyond this they were far from concordant. With a dappled sky or with light cumulus clouds the solar combustion might be more active than with a blue sky or with a slight amount of cirrus. In a word, the apparent fineness of the body is not in any way related to its chemical activity and its hygienic power. On the whole, however, the action was greater in August than in September. This is in accordance with the experience of every photographer. As accounting partly for the discrepancies found between succeeding days both equally fine, M. Duclaux states that all essential oils and the odors sent forth into the air by vegetation diminish the actinic power of the radiations which reach the surface of the soil.

THE fourth International Congress of Criminal Anthropology will be held at Geneva, August 25–29, 1896. Application for membership should be sent to M. Maurice Bedot, Musée d'histoire naturelle, Geneva, Switzerland.

THERE has been established in Amsterdam, under the editorship of Dr. F. H. A. Peypers, a journal devoted to the history and geography of medicine.

THE Rebman Publishing Co., London, has in press a serial entitled *Archives of Clinical Skiagraphy*, edited by Dr. Sidney Rowland. The first plate will be the osseous system of a child, and five further plates, showing obscure injuries to the knee, etc., will be included in the first part.

THE *British Medical Journal* states that Dr. Edward Frankland has been asked to preside over the Toronto meeting of the British Association. It was at one time thought that the office would be accepted by the Prince of Wales, but he has decided that he would be unable to go to Canada next year.

THE *Naturwissenschaftliche Rundschau* states that the Academy of Science at Munich has awarded the Liebig gold medal to Prof. Friedr. Stohmann, of Leipzig, and the silver medals to Prof. B. Tollens, of Göttingen, and Dr. P. Sorauer, of Berlin. Prof. Tollens has also received an award of 1,000 Marks for his research on carbohydrates.

UNIVERSITY AND EDUCATIONAL NEWS.

MRS. LYDIA BRADLEY, of Peoria, Ill., has made known her intention of giving $1,000,000 for a polytechnic institute in Peoria.

A BOSTON citizen whose name is withheld has given $100,000 to establish a chair of comparative pathology in the medical school of Harvard University.

MRS. J. S. T. STRANAHAN, of Brooklyn, has given $5,000 to the building fund of Barnard College.

THE Catholic University will build a dormitory costing about $60,000 and accommodating about 50 students. It will be ready for use next October. There are at present no dormitories belonging to the universities. The University has received $5,000 by the will of the Rev. Father Dougherty, of Honesdale, Pa.

IT is expected that Mayor Strong will approve the bill authorizing the Board of Estimate and Apportionment to give the College of the City of New York $175,000 a year instead of $150,000, the amount it has received for several years.

OF the twenty-four fellowships annually awarded by Columbia University, the following appointments have been made in the sciences coming immediately within the scope of this journal: C. J. Keyser, *mathematics;* J. G. C. Cottier, *mechanics;* F. Schlesinger, *astronomy;* F. L. Tufts, *physics;* H. C. Sherman, *chemistry;* D. H. Newland, *geology;* P. A. Rydberg, *botany;* H. E. Crampton, Jr., and J. H. MacGregor, *zoölogy;* S. I. Franz and L. B. McWhood, *psychology.*

AT Bryn Mawr College Miss F. Cook has been appointed fellow in mathematics; Miss F. Lowwater, in physics, and Miss C. Fairbanks, in

chemistry. A fellow in biology will also be appointed.

THE University of Utrecht will celebrate this year its 260th anniversary, the *fêtes* beginning on June 22d. The many American students and professors going abroad during the summer will find this a favorable opportunity to visit Utrecht.

THE late Mrs. Nichol, of Edinburgh, has bequeathed $10,000 to Edinburgh University, to found a scholarship in physics.

PROF. J. PERRY has been appointed to the vacant chair of mechanics and mathematics at the Royal College of Science, London.

THE University of Edinburgh has conferred the degree of LL. D., on President F. A. Walker, of the Massachusetts Institute of Technology.

THE Senate of Glasgow University has conferred the degree of LL. D., on Prof. Thiselton-Dyer and on Prof. Andrew Gray.

DR. ALBERT FLEISCHMANN has been promoted to an assistant professorship in the University of Erlangen and has been appointed director of the Zoölogical Institute. Dr. George Rörig, of the Agricultural High School at Berlin, has been appointed assistant professor of zoölogy in the University of Königsberg.

DISCUSSION AND CORRESPONDENCE.

THE MATERIAL AND THE EFFICIENT CAUSES OF EVOLUTION.

PROFESSOR BROOKS states in the last number of this journal that he is glad to find that after much irrelevant discussion one reader (M. M., SCIENCE, Apr. 3d) has found the thesis of his article on *Science and Poetry* (SCIENCE, Oct. 4, 1895) worthy of serious consideration. Now it seems to me on the contrary that M. M. does not discuss Professor Brooks' views, but simply points out the ambiguity of his phrase 'test of truth.'

I should suppose that no one outside of a madhouse would dispute Professor Brooks' view that conceivability is not a sufficient test of truth. Whether or not conceivability is a necessary condition of truth depends somewhat on what is meant by 'conceivability,' which is a comparatively new word, and is used by Professor Brooks with some latitude. If it be inconceivable to him that the image on the retina is inverted, then of course conceivability is not for him a necessary condition of truth. Whether or not a proposition which would commonly be regarded as inconceivable—as that a straight line may enclose an area—could in a special case be proved true by evidence, and if so whether the proposition would continue to be inconceivable, are questions which M. M. does not discuss.

At the risk of again being accused of irrelevancy by Professor Brooks, neither shall I discuss these questions, but wish to make clear a distinction analagous to that pointed out by M. M. In discussions on the theory of evolution we find Neo-Darwinians saying that 'natural selection' is the cause of the origin of species, and Neo-Lamarckians saying that the environment and the movements of the animal are the causes of adaptations. Now in these cases the word 'cause' is used ambiguously, ignorance of the facts of evolution being concealed by the exhibition of ignorance of logic.

I wonder how many men of science have read Aristotle, or understand his distinctions between material, efficient, formal and final causes. We are not here concerned with a formal cause, the idea or plan of a thing, nor with a final cause, the end for which it is made; but no student of organic evolution can afford to ignore the distinction between material and efficient causes, or between the occasion and the efficient cause of an event. The material cause is that of which a thing is made, one of the occasions or necessary conditions of its existence; the efficient cause is that which produces a thing and makes it what it is. When no qualification is used *cause* should mean efficient cause or *vera causa*.

'Natural selection' is no cause of the origin of species, but may be the cause of the anihilation of unfit species. Whether or not the environment, or consciousness, or the movements of animals are causes of hereditary modifications are open questions. What is called the cause of an adaptation is, however, usually only its occasion. Thus at a recent meeting of the