

are both absorbed by lithium with formation of the carbid. Heated in an atmosphere of acetylene or of ethylene, the gas is completely absorbed and a definite mixture of lithium carbid and lithium hydrid formed. Lithium seems, however, to be almost without action upon methane.

M. PETIT has carried out a series of experiments at the University of Nancy on the action of waters containing dissolved salts upon iron. He was led to the work by the fact that the waters of the Moselle (and the same is true of many other waters) attack iron pipes and reservoirs, often penetrating them, while large quantities of iron oxid are deposited. The action is due, he finds, chiefly to the action of carbonic acid, free or in the state of combination in calcium bicarbonate. Such water rapidly attacks the iron with liberation of hydrogen. The iron is at first present in solution as ferrous carbonate, but is rapidly oxidized by dissolved oxygen and deposited as ferric oxid. If other salts are present the action is increased. Thus alkaline sulfates are reduced by the iron to alkaline sulfids, and these are changed by the carbonic acid to alkaline carbonates, while the liberated sulfur forms, with the iron, ferrous sulfid. Common salt acts most energetically, here also sodium bicarbonate being formed. This action of iron upon calcium bicarbonate and on carbonic acid explains the action of such waters on iron pipes, and also the purification of water by spongy iron.

The action of certain hard waters on brass (faucets, etc.), may possibly be similarly explained, the carbonic acid acting upon the zinc and leaving the brass in an almost porous condition. J. L. H.

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#### SCIENTIFIC NOTES AND NEWS.

##### A DIRECTOR OF SCIENTIFIC WORK FOR THE DEPARTMENT OF AGRICULTURE.

THE Secretary of Agriculture, in his fourth annual report to the President, calls special at-

tention to the benefit that has resulted from the use of the classified civil service in the Department, and urges that this system should be completed by the appointment of a permanent director of scientific work. We have already urged this step, but it may be well to repeat the arguments of the Secretary of Agriculture.

The Secretary, being a Cabinet officer, must be changed with each new administration, and the Assistant Secretary is subject to the same conditions. These executive officers are necessary, but another officer is needed to direct the work of the various scientific bureaus of the Department, under the general authority of the Secretary, and to give permanence to the policy of the Department. In order to accomplish the best results, the Department must have a settled policy with regard to all its scientific work. This Department has less relation to the general executive business of the government, and less connection with what is usually called politics, than any other Department of the government. In fact, the scientific work of the great bureaus, divisions and surveys should be kept free from politics to be efficient and impartial. The numerous bureaus and divisions do not have under the present organization, in fact cannot have, the attention and direction which the interests involved demand. After a change of administration the Department is practically headless, and to a great extent helpless, until the new Secretaries have had time to master the details of the technical work. A director of scientific divisions is needed, therefore, if for nothing else, to carry on the scientific work of the Department from one administration to the next. Further, the Secretary of Agriculture cannot be expected in all cases to unite the necessary executive ability with adequate scientific training, and his duties are already onerous, a large part of the work of the Department extending over the whole country.

The Senate Committee on Agriculture and Forestry last year recommended the passage of the bill establishing the office of 'Director in charge of scientific bureaus and investigations for the Department of Agriculture,' but the bill was introduced too late for consideration dur-

ing the last session of Congress. The estimates for the next fiscal year contain, however, a recommendation for an appropriation of \$6,000 per annum for this office, in the expectation that it will be created by Congress.

#### YOUNG'S 'REVERSING LAYER.'

In a careful review of the progress of astronomy during the year 1896, published in the *London Times* of January 14th, the author writes: "At Novaya Zemlya, Mr. Shackelton, using a spectroscope without a slit—since the extremely narrow sickle of light at the moon's limb made a slit unnecessary—and timing the exposure of his plate to the precise moment of the progressing eclipse which corresponded to that at which Professor Young made his classical observation by eye in 1870, was fortunate enough, with an exposure of half a second, to secure a permanent record of Young's reversing layer. It consists of a very narrow spectrum of bright lines, which are, indeed, the Fraunhofer lines reversed. A plate exposed two seconds later showed a comparatively simple chromosphere spectrum. The congratulations of astronomers are due to Professor Young upon this complete, though late, confirmation of his observation of 1870 and of his views, speaking broadly, of solar absorption founded upon it. Professor Young, after a careful comparison of the Novaya Zemlya photograph with a Fraunhofer spectrum taken with the same prisms, but with a collimator and slit before the prisms, writes:

"With very few exceptions every Fraunhofer line finds its correlative in the 'flash spectrum.' I do not see but that the evidence as to the origin of the great majority of the Fraunhofer lines within a very short distance from the photosphere is practically complete. Very possibly some of the absorption occurs at higher levels; but it seems to me clear that most of the absorbing metallic vapours are at the base of the chromosphere, in a thin stratum or layer, if one chooses to call it so; not that I suppose it to be a quiescent sheet or a stratum in any different sense from the chromosphere itself."

"Professor Young further points out that it would be absurd to compare the number of bright lines of this 'flash' spectrum, taken with two prisms only, a lens of 10-in. focus and no slit, with the number of dark lines in Row-

land's great solar map, photographed with a large concave grating, a fine slit, and every possible refinement of adjustment."

#### MOTOR CARRIAGES.

IN view of the scientific and practical importance of motor carriages, we give the report made by the jurors in connection with the recent exhibition at the Crystal Palace, London:

"Although none of the vehicles exhibited approached that degree of perfection which would place them beyond the adverse criticism which condemns any evidence of an unrealized attempt, they are of opinion that several of the vehicles shown and worked in the Crystal Palace grounds have reached a degree of practical sufficiency meriting some distinctive mark of appreciation. Most of the vehicles, which have withstood the test of considerably hard daily work, were propelled by motors actuated by the internal combustion of light oils, such as benzoline. The use of these light oils in this country has been discouraged, although the cause of this is probably due more to fiscal and to other restrictive regulations than to any real evidence of danger attaching to it. Most of the carriages exhibited and worked in the grounds have motors supplied with hydrocarbon vapor, produced by the passage of air through some form of carburetter containing benzoline. This vapor, mixed with air, and compressed and heated by the incoming stroke of the motor piston, was, with one exception, ignited by an electric spark, obtained by means of a secondary battery and induction coil. The one exception was the carriage of Peugeot, fitted with a Daimler motor, and lent by Sir David Salomons. This vehicle, however, did not come within our cognizance at the time of our visit with respect to the merits and awards.

"We have carefully considered the various points in the construction, detail and working of the several vehicles and their motors, and we are very strongly of opinion that these benzoline motor carriages do, even in their present state of advance towards sufficiency, show that such motors may be practically employed for propelling vehicles of various kinds and for various purposes. The carriage of M. Delahaye showed a distinct step in advance upon the

other benzoline motor-vehicles; its double small horizontal cylinders, with opposite cranks and other details, including a very satisfactory tubular water cooler, with simple force pump circulator, secures steadier motion, freedom from escaping steam or water vapor, and more power in a given space. He has placed before us a carriage which only needs the development to which experience will point the way.

"These latter remarks pertain equally with regard to the steam vehicles exhibited and worked. The steam vehicles undoubtedly showed the greatest power and the greatest flexibility or range of power. The ability to stop the motor and start without manual assistance was seen to be a noteworthy advantage, not only as a matter of convenience, but as a means of avoiding an otherwise very persistent vibration of the vehicle when standing. The steam carriage exhibited by M. Serpollet, although not of the maker's most recent form, is one which merits particular notice for its originality, its value as an indication of the possibilities with a steam boiler and engine of the types used, its superiority with regard to range of power, and its exemplification of the advantages already referred to as to convenience in several respects.

"The steam van exhibited by the Thornycroft Steam Carriage and Wagon Company we also recognize as a very meritorious illustration of the most useful lines upon which arrangement and development of a most important class of motor-vehicles may proceed. The jurors considered it matter for regret that no electrically propelled vehicle had been submitted for trial."

#### GENERAL.

HON. JAMES WILSON, of Iowa, will be Secretary of Agriculture under the next administration. He is director of the Iowa Agricultural Station and professor of agriculture in the Iowa Agricultural College. He was for many years a teacher in the country schools and has been since a practical farmer, having earned the money for the purchase of the farm of 1,200 acres, said to be one of the best equipped and best managed in the State, which he now cultivates. Professor Wilson has served three terms

in Congress. He was born August 16, 1835, in Ayrshire, Scotland.

It is reported that Judge Joseph McKenna, of California, will be the next Secretary of the Interior.

THE St. Petersburg Academy of Science has elected M. Joseph Bertrand, the permanent secretary of the Paris Academy of Sciences, an honorary member.

PROFESSOR E. E. BARNARD, of the Yerkes Observatory, University of Chicago, has sailed from New York for Southampton, on his way to London. He will attend the meeting of the Royal Astronomical Society on February 12th, to receive the gold medal awarded to him for distinguished service to the cause of astronomical science.

A SANITARY conference on the Bubonic Plague opens at Venice to-day. The representatives of Great Britain will not favor quarantine regulations, but the Continental governments seem apprehensive lest the plague may spread to Europe. Dr. Koch has been summoned by the German government from South Africa, where he has been studying the rinderpest, to head a special commission which will be sent to Bombay to investigate the plague and report on measures that should be taken to prevent its introduction into Europe. Similar steps are being taken by the governments of Russia and of Italy. The plague has not appeared in eastern Europe since 1721 and not in England since 1665, when upwards of 100,000 persons died from the disease. The Black Death of the fourteenth century, which in three years destroyed 24,000,000 Europeans, was perhaps the bubonic plague. The plague is essentially a *miseriæ morbus* and the present sanitary conditions are such as to make an epidemic unlikely. Still a man who is so little an alarmist as Lord Lister said in a recent address in Belfast that the plague might be easily carried from Bombay in ships. "Rats were liable to contract it, and a rat making its escape from a ship coming from Bombay—say, to the Thames or to Belfast Lough—might carry the plague ashore and, entering any of their slums, might affect human beings with this dreadful disease."

MT. ACONCAGUA, in the Andes, over 24,000

feet in height, has been ascended by the Swiss guide, Zurbriggen. He was in the company of Mr. Fitzgerald, who was unable to reach the summit.

At the International Exhibition at Brussels in 1897 special efforts will be made to secure an adequate representation of the sciences. Space for scientific exhibits will be given free of charge and a considerable number of prizes are offered.

THE King of Belgium has offered a prize of about \$5,000 for an essay on the sanitary conditions of equatorial Africa. Papers for competition should be presented by July 1st of the present year.

A PUBLIC library and museum will be founded at Cettigne, Montenegro. The antiquities found in the principality itself will be deposited in the museum. The excavations recently made at Dukla have produced satisfactory results.

WE regret to record the deaths of Baron von Ettingshausen, professor of botany at the University of Gratz, at the age of 71 years; of Dr. Edward Ballard, F. R. S., the author of works on public health and other medical subjects, aged 66; of M. Martini, the inventor of the Martini rifle; of Dr. Wilhelm Deeke, the German archæologist, at the age of 66; of Kristian Bahnson, the Danish ethnologist; of Joseph D. Weeks, editor of the *American Manufacturer*, at Pittsburg, Pa., and known for his contributions to economic geology; and of Giuseppe Proto-notari.

ACCORDING to *Nature*, the scientific expedition organized by the German government to study the economic and industrial conditions and possibilities in the Far East intended to start from Bremen on January 27th, on board the North German Lloyd steamer *Sachsen*. The nature and scope of the investigations to be undertaken were discussed and settled at a recent meeting at the Ministry of the Interior.

*Natural Science*, quoting from the *Daily News*, reports that the Imperial Natural History Society of St. Petersburg, intends to publish a Flora, first of European Russia and afterwards of Russia in Asia and the Caucasus.

SENATOR GALLINGER has presented, by request, in the Senate, a bill for a department of

health proposed by the Pan-American Medical Congress.

A BILL introduced into the Wisconsin Legislature provides for a State bee inspector to suppress foul brood among bees. The wholesale valuation of the honey and beeswax produced annually in Wisconsin is \$160,000.

At a meeting of the Fellows of the Royal Botanical Society, on January 30th, it was agreed that the use of the gardens should be offered to the Lord Mayor, the Chairmen of the London County Council and the London School Board, and the secretaries of societies desirous of holding receptions.

MR. MACARTNEY stated recently in the British House of Commons that the question of the unification of time, which is a very debatable one, has received long and careful consideration for many years. The alteration of the astronomical day cannot be effected for the sea alone, as it affects astronomers even more closely than sailors, and it must also be carried out by international agreement. Foreign powers publishing astronomical ephemerides were consulted in 1894, and when it was found, from the replies received in 1895, that the change would not be accepted by all these the Foreign Office was requested to inform the powers in question that no further steps would be taken by the British Admiralty. The Nautical Almanac for 1901 has therefore been calculated on the existing system.

AN Italian Electro-technical Society has been formed in Milan, with Professor G. Ferraris, of Turin, as its first president.

MR. URIAH A. BOYDEN, of Boston, has offered, through the Franklin Institute of Philadelphia, a prize of \$1,000 to 'any resident of North America—including Mexico and the West Indies—who shall determine by experiment whether all rays are or are not transmitted with the same velocity.' The papers must be submitted before January 1, 1898.

WE learn from *Nature* that the University of Catania has been presented with the Island of Cyclops, off the coast of Sicily, by Signor Gravina. The island is only a kilometer in circumference, but its configuration is peculiar, and the center is about one hundred meters

above sea level. It is proposed to construct upon the island a laboratory for investigations in zoology and pisciculture.

THE Boston Society of Medical Sciences has begun the publication of a journal, which is issued, for the present, for free distribution. It contains authors' abstracts of papers presented at the meetings of the Society, and is published promptly after each meeting. A vote of the faculty of the Harvard Medical School requests 'each head of department to have, at least, a summary of the scientific investigations made in his department presented at a meeting of the Boston Society of Medical Sciences for preservation in its journal,' so that the journal will contain a summary of what work of this nature is done in this school. Similar action has been taken by the biological and physiological departments of the Massachusetts Institute of Technology, and contributions of the same nature are promised from Clark University and from the experimental laboratories of the Massachusetts General and the Boston City Hospitals. Papers, or abstracts of papers, upon subjects connected with the medical sciences will be welcomed from persons who are not members, and, if approved by the Council, will be presented at these meetings, and abstracts will be given a place in the Journal of the Society. All communications should be addressed to the Secretary of the Boston Society of Medical Sciences, Harvard Medical School Boston, Mass.

THE general dissatisfaction with the position of geography in secondary schools, and the strong efforts made on every hand for its improvement, are the justification of adding one more to the list of educational journals; the *Journal of School Geography* having just made its appearance. Professor R. E. Dodge, of the Teachers' College, New York, is the responsible editor, with five associate editors, Messrs. Davis, Hayes, Kummel, McMurry and Ward. The first number contains an introductory statement by the editor; Home Geography, by W. M. Davis; Some Things about Africa, by C. C. Adams; Geographic Instruction in Germany, by Will S. Monroe; Suggestions Regarding Geography in Grade Schools, by R. E. Dodge,

and a variety of notes and reviews. Readers of SCIENCE, as possible writers for this journal, should address the editor, Teachers' College, 120th St. West, New York City; as subscribers, they should send a dollar for ten yearly numbers to the publishers, 41 N. Queen St., Lancaster, Pa.

THE lecture on Variation of Latitude, by Professor J. K. Rees, before the New York Academy of Sciences, April 29, 1895, has been reprinted by the Smithsonian Institution from the report in SCIENCE, New Series, Vol. I., No. 21. The paper is made part of the Smithsonian Report for 1894, pp. 271-279, and is also printed as a separate pamphlet.

*Nature* states that following the example of the Institution of Civil Engineers, the Society of Civil Engineers of France has built itself a magnificent house, which was opened with great ceremony, on January 14th, by the President of the French Republic. A large number of guests were present at the soirée, including representatives of the various French technical societies. The only English society represented was the Iron and Steel Institute, who sent Professor Roberts-Austen. The new building, which is situated in the Rue Blanche, Paris, was designed by M. F. Delmas, and was erected in 262 days. It comprises in the basement engine-rooms and store-rooms, on the ground floor the meeting-room, on the first floor reception-rooms for the members, on the second floor the secretary's office and the council-room, and on the third floor the library. Access to the various floors is obtained by means of an electric lift. The meeting-room contains seats for 500 persons, and the floor is so arranged that it may be horizontal for receptions, or inclined so as to convert the room into an amphitheatre for the meetings. The floor weighs thirty tons, and its transformation from a horizontal to an inclined position is effected with great rapidity by means of hydraulic machinery.

*Natural Science* reports that the Committee of the International Geographical Congress, held in London in 1895, has recently sent to the various geographical societies, resolutions, urging the importance and desirability of: (1) Antarctic exploration; (2) a geographical bibliog-

raphy, compiled by various states; (3) a topographical survey of Africa; (4) a map of the earth on a scale of 1:1,000,000, with the meridian of Greenwich and metric measurements; (5) the continuance of physical investigations lately made in the Baltic, North Sea and North Atlantic; (6) an international system of seismographic stations; (7) agreement between the various geographical societies as to the spelling of foreign names; (8) the printing on all geographical maps henceforward the date of their publication. Further, they request the opinion of the societies as to the application of the decimal system to the measurement of time and of angles.

A CORONER's jury at Jamestown, N. Y., has rendered a verdict to the effect that Spurgeon Young came to his death on January 24th from diabetes and nervous exhaustion caused by hypnotic practices performed by persons who are specified. It is said to be probable that the matter will be carried to the courts.

ACCORDING to the *British Medical Journal*, M. Julien Dumas has announced his intention to interrogate the French government on the abuse of the Bertillon system of measurement. M. Dumas asserts that the calculations made by M. Bertillon are far from correct. He has had in his possession measurements taken of the same person at an interval of ten years. There were not two alike. M. Dumas expressed his desire to visit the anthropometric service. The Minister of the Interior and the Police Prefect asked him to name his day. M. Bertillon, with great courtesy, explained his system. He sent for a woman who had refused to give her name. She then said her name was Garcias, her birthplace Bordeaux. Measurements were taken. M. Dumas, being initiated, found without assistance the photograph of this woman, whose real name was Tosas, and her birthplace was not Bordeaux. Much astonished he warmly praised anthropometry. He carried away with him four or five books on the subject. In one of them he found three photographs typical of the criminals most often met with. One of these was of the woman measured that morning, kept on the premises, according to M. Dumas, to illustrate the system.

THE Russian National Health Society has celebrated, in the manner proposed, the Jenner Centenary. Addresses were made by the Grand Duke Paul, Dr. Kudrin and Dr. Cormillo. Gold medals for the best works on vaccination were awarded to Dr. Laver, of Bordeaux; Dr. Miller, of Moscow, and Dr. Glagolef. The exhibition in connection with the celebration is said to be very full and interesting.

THE Baroness de Hirsch has given \$300,000 to found a hospital on the Mediterranean coast for English consumptive children.

THE *Botanical Gazette* states that \$6,000 has been appropriated for the erection of a research laboratory at Buitenzorg.

It is stated in the *British Medical Journal* that the Society of Neurologists and Psychologists of Moscow has appointed a special committee (1) to report upon the present state of inebriety in that city, and (2) to draw up a scheme for the erection of a hospital for inebriates.

THE Secretary of Agriculture, in his report to the President, calls attention to the fact that during the fiscal year just ended the exported products of American farms aggregated a value of \$570,000,000. That is a gain of \$17,000,000 over the preceding year. During the fiscal year 1896 agricultural products make up only 66 per cent. of the total exports of the United States, as against 70 per cent. in 1895, 72 per cent. in 1894, and 74 per cent. in 1893. But the reason of a relatively decreased value of 4 per cent., with an increase in the absolute valuation of agricultural products shipped in the year 1896, amounting to \$17,000,000 more than those of the preceding year, 1895, is solely due to the unprecedented sale abroad of American manufactured goods and commodities, the exports of which from the United States jumped from a valuation of \$184,000,000 in 1895 to \$228,000,000 in 1896.

THE *Lancet* states that, at a recent meeting of the Plymouth Borough Council, the question of the acquisition of Dartmoor by the County of Devon, in order to prevent further encroachments, was discussed. This scheme, which was submitted by the Dartmoor Preservation Association, was unanimously ap-

proved of, and the Council pledged itself to bear its fair share of the cost of purchasing 130,000 acres of Dartmoor from the Duchy of Cornwall, provided that the county authorities have power to preserve all objects of archaeological and antiquarian interest and the indigenous plants and animals. The other Devonshire authorities have also promised their support to the scheme.

THE correspondent of the *British Medical Journal* at the Cape of Good Hope writes that Professor Koch joined Dr. Edington, the bacteriologist, to Cape Colony, early in December, and that a number of *post-mortem* examinations of animals were made by them together. In the beginning of October, when the disease had passed well within the lines of railway so as to be easily accessible, Dr. Edington converted a saloon car to serve as a laboratory, and went with a veterinary assistant, Mr. W. Robertson, and his secretary, Mr. Guthrie, to the infected area. Some difficulty was at first experienced in getting the assistance of the chief of the Kaffirs there, but eventually, with the assistance of some Fingoes, a camp was established, and bacteriological and pathological investigations were begun. It was at this camp that Professor Koch studied the *post-mortem* appearances, and the virus obtained from these animals is now being investigated at Kimberley in a laboratory which has been just set up by the bacteriological department, and it is probable that Dr. Koch and Dr. Edington will shortly work there together. The inoculation experiments with blood made at the camp by Dr. Edington and his assistants showed that a rise of temperature was thus produced usually after about four days, but not always, as the rise was sometimes delayed. The blood examined showed the presence, in most cases, of bacillary forms and some irregularly spherical organisms. In some instances scarcely anything was to be seen, but if care were used the bacillary forms could be recognized. A short bacillus about  $2\mu$  long and  $0.5\mu$  broad has been isolated, which has been used for inoculation with positive results. As, however, within the past six weeks 20,000 cattle have died in the country in which the rinderpest camp is situated, it is evident that no definite statements can be made until

the cultures have been tested in an area free from the disease.

THE following notes on French explorations are taken by *Natural Science* from *Anthropologie*. Mr. Clozel, Administrator of the French Possessions on the Ivory Coast, is endeavoring to make valuable ethnographic and geological collections. Important results are expected from two such enthusiastic explorers as Messrs. Bonnel de Mézières and de Béhagle, who are starting for Central Africa. Mr. Bonin has returned to Tonkin from the south-western provinces of China, whence he brings much material and many facts of an ethnographical and anthropological nature. On their way from Turkestan to Siberia, Mr. Chaffanjon and his party have gathered large collections of the fauna and flora, and accumulated much information regarding ethnography and geography. In Siberia, too, Baron de Baye has been carrying on his archaeological and ethnographical studies. Mr. E. Blanc, who has been to Nijni-Novgorod, is bringing back rich scientific collections. Mr. Raoul, Official Colonial Chemist, is starting on government business for Borneo, where he hopes to carry on scientific studies. The Hourst expedition, whose return, which has been already noted, has proved the navigability of the Niger from Bammako to the sea.

ACCORDING to the *London Times*, the Colonial Office, the Natal and Cape governments and the Board of Agriculture have been in communication for the past month as to the best means of preventing the cattle plague in South Africa from spreading into either Natal or the Cape Colony. Various inquiries have been made as to what steps should be taken, and recently at the Board of Agriculture, a special conference of heads of departments concerned was held to consult together on the subject. The chief officials concerned of the Board of Agriculture and the Colonial Office met the Agents-General of Natal and the Cape Colony and other Cape authorities. Further meetings will be held on the subject, and it is contemplated that the government will sanction every effort to save the colonies of Natal and the Cape from rinderpest.

ACCORDING to *Industries*, the Parliamentary

return as to street and road tramways during the year ending June 30, 1896, signed by Mr. Francis J. S. Hopwood, is just issued. It shows that the total capital expended in England and Wales during the year was £11,742,204, as compared with £11,685,355 in the preceding year. The total for the United Kingdom was £15,195,993, against £14,956,343. The length of line open for public traffic in the United Kingdom was 1,009 miles, an increase of 27 miles on the preceding year. While the horses used by the companies increased from 32,273 in 1894-95 to 35,621 in the succeeding year, the number of locomotive engines belonging to the companies decreased by two. The engines numbered 568 in 1895, as compared with 452 in 1896 and only 14 in 1878. The total number of passengers carried on the tramways in the United Kingdom during the year was 759,466,047, against 661,760,461 in the preceding year; the working expenses £3,105,511, against £2,878,490; and the net receipts £1,046,505, against £855,200. There were 37 tramways belonging to local authorities, with a total mileage of 335 as compared with 116 belonging to other than local authorities with a mileage of 673.

THE Annual General Meeting of the Royal Meteorological Society was held on January 20th, Mr. E. Mawley, President, in the chair. The Secretary read the report of the Council, which showed that the Society had made steady progress during the past year, there being an increase of seventeen in the number of Fellows. The President then delivered an address on 'Shade Temperatures,' in which he stated that of all meteorological observations there were none approaching in importance those made of the temperature of the air, generally known as 'Shade Temperature.' Indeed, the first question invariably asked in regard to almost any climate was as to its temperature. Mr. Mawley traced the history of the different methods of exposing thermometers since the time that regular observations of the weather had been made in this country. For many years open screens were most favored by meteorologists, that devised by Mr. J. Glaisher, F.R.S., and the late Astronomer Royal (Sir G. B. Airy) being the pattern principally used. In 1864 Mr. T. Stevenson, C.E., invented an ad-

mirable form of closed screen with lowered sides, which was considered preferable to the open type of screen, and has now almost entirely superseded the Glaisher Stand. In 1883 the Stevenson screen was considerably improved by a committee of the Royal Meteorological Society. Mr. Mawley then described his own experiments at Croydon and Berkhamsted, as regards this improved screen, known as the Royal Meteorological Society's pattern. He showed that the only two defects which had been attributed to this form of thermometer exposure were virtually non-existent, and therefore advised its general adoption both in this country and on the Continent. Mr. Mawley had recently made observations in the Stevenson screen, and also in the screens used in France and Germany, and the conclusion he had come to was that the results obtained in the Stevenson screen were not only the nearest to the true air temperatures, but also more likely to be strictly comparable with temperatures taken in a similar screen but with different surroundings elsewhere.

#### UNIVERSITY AND EDUCATIONAL NEWS.

THE will of the late Mrs. Horatio Lyon, of Springfield, Mass., gives, among other public bequests, \$10,000 to Monson Academy, \$10,000 to Pomona College and \$10,000 to Menden Free Library.

HARVARD UNIVERSITY has received from Mr. J. Howard Nichols \$5,000, to be used for the founding of a new scholarship, preference being given to a student from the State of Alabama.

THE will of the late Charles Willard, of Battle Creek, Mich., leaves \$40,000 to the Baptist College at Kalamazoo, Mich., and \$40,000 for a library building for the city schools at Battle Creek, Mich.

THE new physiological and pathological laboratories of Queen's College, Belfast, were formally declared open on January 19th, and on the following day an address was made by Lord Lister. The building contains two floors about 80x40 feet in size, the lower one being devoted to physiological and the upper to pathological laboratories.