

earlier figures of Becquerel: silver 960°, gold 1092°. Among earlier observations for silver are Guyton de Morveau 1034°, Princep 1000°, Ledebur 960° and Daniell 1223°; for gold, Pictet 1100°, Pouillet 1200° and Wegele 1250°. The variation is not surprising when one considers the meagre means for determination at the hands of the early observer; it is rather surprising that they came so near the truth.

THE *Mitglieder-Verzeichniss* of the Deutsche chemische Gesellschaft for 1898 is just at hand and shows a list of 2989 members, making it the largest chemical society and perhaps the largest scientific society of the world. Its members are by no means confined to Germany, 1268 or over 42% being from other countries, so that it may almost be considered international in its scope. It also indicates the domination of Germany in chemistry. Almost every civilized and some hardly civilized countries are represented in its membership. This country has 285 members and Great Britain 232, these two furnishing over 40% of the membership outside of Germany. Next to these come Austria with 141 members, Switzerland with 131, and Russia with 118.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

THE WASHINGTON ACADEMY OF SCIENCES.

THE Washington Academy of Sciences adopted on March 29th the following schedule of functions:

1. The holding of meetings to receive the annual addresses of the Presidents of the affiliated societies.
2. The holding of meetings (*a*) to listen to scientific communications from prominent authorities specially invited for the purpose, and (*b*) to hear from selected members of the affiliated societies résumés of recent progress, statements of important questions pending in their respective branches, and other matters of general scientific interest.
3. The publication of proceedings in cooperation with the affiliated societies.
4. The inauguration of measures looking to the

provision of a building for the use of the Academy and the affiliated societies.

5. The acquisition of a fund to be used in aid of scientific research.

The Medical Society has been added to the affiliated societies. The list of officers for 1898 is as follows:

President, J. R. Eastman.

Vice-Presidents: From the Anthropological Society, J. W. Powell; from the Biological Society, L. O. Howard; from the Chemical Society, H. N. Stokes; from the Entomological Society, W. H. Ashmead; from the Geographic Society, A. Graham Bell; from the Geological Society, Charles D. Walcott; from the Medical Society, S. C. Busey; from the Philosophical Society, F. H. Bigelow.

Secretary, G. K. Gilbert.

Treasurer, Bernard R. Green.

Managers: Class of 1901—Marcus Baker, Henry S. Pritchett, George M. Sternberg. Class of 1900—F. W. Clarke, C. Hart Merriam, Lester F. Ward. Class of 1899—Frank Baker, Carroll D. Wright.

THE HONORARY WALKER PRIZE.

IN 1864 the late Dr. William Johnson Walker gave to the Boston Society of Natural History a prize fund from which the Council of the Society may, not oftener than once in five years, grant a Grand Honorary Prize. This award may be five hundred or a thousand dollars, at the option of the Council. In previous years this prize has been awarded four times: first, in 1873 to Mr. Alexander Agassiz for his investigations into the embryology, geographical distribution and natural history of the echinoderms; secondly, in 1880 to Professor Joseph Leidy for his prolonged investigations and discoveries in zoology and paleontology; thirdly, in 1884 to Professor James Hall for his contribution to North American paleontology; and fourthly, in 1892 to Professor James Dwight Dana for his distinguished services in natural history.

At the meeting of the Council of the Society held April 20th it was voted to award the Grand Honorary Walker Prize of one thousand dollars to Mr. Samuel Hubbard Scudder, of Cambridge, for his contributions to entomology, recent and fossil. It is surely unnecessary here to dwell upon Mr. Scudder's life-long devotion to science. His contributions to the study of fossil insects of all orders and from all formations, and of the Orthoptera and the Lepidoptera, are

well known; his catalogue of scientific serials and his 'Nomenclatur Zoologicus' are equally well known and invaluable.

All scientific men will agree that in this award the Council of the Society has maintained its past high standard, and will join in wishing Mr. Scudder many years of health and vigor for the continuance of his work.

GENERAL.

THE National Academy of Sciences held its annual stated meeting at Washington last week, beginning on April 19th. A report of the meeting will be published in the next issue of this JOURNAL.

A SPECIAL meeting of the Council of the American Association for the Advancement of Science was held in Washington on April 20th. President Gibbs presided and the Permanent Secretary and President-elect, Professor Putnam, reported on the arrangements for the Boston anniversary meeting. Professor McMahon, of Cornell University, was elected General Secretary in the place of the late Professor Kellicott. A large number of new members were elected, and routine business was transacted. Committees were appointed to consider revisions of the constitution and of the functions of the nominating committee made necessary by the amendments adopted at Detroit.

THE University of Pennsylvania's Marine Biological Institute, on the shores of Ludlam's Bay, at Sea Isle City, N. J., is to be reopened this summer after being closed for five years. Dr. Milton J. Greenman, of the University, will have charge of the laboratory. A large floating house-boat is to be built for the use of students.

THE French government has agreed to recommend an appropriation of 1,500,000 fr. for a building for the Paris Academy of Medicine. The Academy is at present very inadequately installed in the Charity Hospital. The new building will be on the rue Bonaparte.

THE Committee on Science and the Arts of the Franklin Institute has recommended the award of the John Scott Legacy Medal and Premium to Messrs. Blondel and Psaroudaki for their invention of holophane globes. These secure dif-

fusion of the light and an improved distribution so that the light usually sent off above the horizon is deflected downward to points where it is needed. These results are obtained by reflection and refraction, the globes being transparent.

THE Gold Cothenius Medal, of the Leopoldinisch-Carolinische Akademie has been awarded to Professor Emil Fischer, of Berlin.

DR. NANSEN arrived in London from Christiania on April 11th. The visit is in order that he may complete the lectures which he was obliged to postpone last February on account of the illness of his infant son. After a week or so in the country he leaves for Vienna and St. Petersburg.

DR. FREDERIC PETERSON has been elected President of the New York Neurological Society.

WE regret to record the sudden death from pneumonia of D. S. Kellicott, professor of zoology at Ohio State University and at the time of his death General Secretary of the American Association for the Advancement of Science. Professor Ernst Stöckhardt, formerly Director of the Agricultural Institute of Jena, died at Bautzen on March 27th.

THE Philadelphia *Medical Journal* states that the Germans have been slower than others in adopting the Bertillon system of personal recognition by a series of measurements and the notation and registration of any natural pigmentary or hairy peculiarities. While the system is in use in France and very generally in Belgium, Switzerland, Russia and Italy, only isolated cities in Germany have adopted it. Some recent work with it at the prison at Moabit, in Berlin, has been encouraging, and now it is announced that the police departments of most of the South German towns are about to adopt it, Munich, Nürnberg, Regensburg, Augsburg and Würzburg having already made the necessary arrangements for its introduction.

It is against the etiquette of the medical profession to secure patents on medical discoveries and in Germany men of science hesitate to patronize the patent office. There does not appear to be such a decided objection to patents among British and American men of science. Lord Kelvin has, according to a paper read by

Dr. Magnus Maclean before the Philosophical Society of Glasgow, taken out 47 patents between the years 1858 and 1896. Of these patents 11 are for improvements in electric telegraphic apparatus, 24 for improvements in the control of electric currents, 10 for improvements in instruments of navigation and two for valves for fluids.

THE American Microscopical Association will hold its next annual meeting at Syracuse, N. Y., from the 30th of August to the first of September.

THE American Neurological Association will hold its twenty-fourth annual meeting in New York at the New York Academy of Medicine, on May 26th, 27th and 28th.

GOVERNOR BLACK has signed the bill authorizing The American Museum of Natural History, New York, to purchase and lease property.

THE appropriation of \$25,000 made in recent years by the Legislature of the State of New York for the extension of agricultural teaching, under the auspices of Cornell University, has this year been increased to \$35,000.

A DECREE has been published forbidding the importation into Austria of American fresh fruit, plants, fruit wrappers and fruit packings, etc., in cases where the examination at the port of entry results in the discovery of traces of the San José scale.

A NEW museum was opened at Keswick, England, on April 11th, being erected in memory of Thomas and Henry Hewitson, the donors of the Fitz Park. In an opening address Professor G. A. Smith, of Glasgow, spoke of the educational value of museums, and contrasted 'the keenness of America in this matter with the apparent backwardness of Great Britain.' We fear the compliment to America is scarcely deserved.

IN connection with the Trans-Mississippi Exposition in Omaha this summer, there is to be an Educational Convention on June 28th-30th. One of the features of this convention will be the Conference of Science Teachers. Arrangements have been made for papers on various sciences and elements in the curricula of the high schools, colleges and universities as fol-

lows: Astronomy—Professor Howe, University of Denver; Botany—Professor MacMillan, University of Minnesota; Chemistry—Professor Palmer, University of Colorado; Geography—Professor Haworth, University of Kansas; Physics—Professor Nipher, Washington University; Zoology—Professor Ward, University of Nebraska. Geology is still to be provided for. It is hoped to bring together a considerable number of Western teachers of science in this conference.

THE National Education Association meets at Washington on the 5th to the 12th of July. There is a Natural Science Section, of which Professor P. C. Freer, of the University of Michigan, is President, and Mr. C. J. Ling, of Denver, Colorado, is Secretary. On July 8th Professor Freer will make an address on 'The Relation of Natural Science Instruction in the High School to that in the University.' A standing committee, of which Mr. A. Smith, Chicago, is Chairman, will report on biological work in the high schools, and the training of teachers for work in science in the secondary schools will be discussed.

ACCORDING to the London *Times*, English interests were well represented at the recent International Congress on Commercial Education at Antwerp. The official delegates from Great Britain included Mr. T. King, Senior Chief Inspector of Schools, and Mr. R. L. Morant, representing the Education Department; Captain W. de W. Abney, C.B., F.R.S., and Mr. Gilbert R. Redgrave, representing the Science and Art Department; Mr. Woodall, M.P., and Mr. Swire Smith, members of the Royal Commission on Technical Instruction, and Mr. John Brigg, M.P., representing the County Council of the West Riding of Yorkshire. The London Chamber of Commerce was represented by Sir Albert Rollit, M.P., Mr. Frank Debenham and Mr. Montagu Barlow. The technical committee of the London County Council had also its representative, as likewise several of the provincial county councils. Some of the grammar schools, Bradford for instance, keenly alive to the value of attentively watching the debates, sent delegates to Antwerp. The Congress marked the 25th anniversary of

the foundation of the Students' Association for the Institute, and the new school buildings were utilized for the proceedings. Among the papers discussed was one by Mr. E. E. Whitfield, of Galashiels, on 'Commercial Education in Great Britain.' The questions brought forward comprised the entire range of commercial education.

THE Section of Astronomy of the Paris Academy of Sciences has recommended the publication by the Academy of Pingré's 'History of Astronomy in the 17th Century.' This work has had a curious history. At the recommendation of Lagrange the Academy decided to publish it in 1791, and made an appropriation for this purpose. But owing to the death of Pingré and to the French Revolution the printing was suspended after some sheets had been prepared. Both these sheets and the balance of the manuscript have been lost for a hundred years, but now M. Bigourdan has discovered a single copy of the sheets in the hands of a French collector and the balance of the manuscript in the archives of the Paris Observatory, lost among observations of Tycho's. The work is said to be not only of historical interest, but also of value to contemporary astronomy in view of the careful observations that it records.

A VERY important contribution to the anthropology of European populations is promised for publication in the forthcoming *Comptes Rendus* of the Association française pour l'Avancement des Sciences. Dr. J. Deniker, librarian of the Musée d'Histoire Naturelle at Paris, will publish, with full bibliographic data, a large and detailed map of the cephalic index of Europe. This is based not only upon an exhaustive collection of published material, but upon much new data from Portugal, the Balkan States and other out-of-the-way regions, of which little has heretofore been known. This valuable work is to be followed by similar treatment of the stature and pigmentation as well, large maps in color having already been constructed for each characteristic.

DR. DANIEL G. BRINTON, of the University of Pennsylvania, read a paper entitled, 'Before the Dawn—Literature Among Savage Tribes' before the members of the Comparative Literature Society, in Carnegie Lyceum, on April 9th.

'Thunder Cloud,' an Indian of pure American descent, elucidated Dr. Brinton's remarks by chants and recitatives in several Indian dialects.

THE Cartwright Lectures of the College of Physicians and Surgeons, Columbia University, will be given at the Academy of Medicine, New York, on Tuesdays, April 26th, May 3d and 10th, at 8:15 p. m., by W. W. Keen, M.D., professor of the principles of surgery and of clinical surgery in Jefferson Medical College. His subject will be, 'The Surgery of the Stomach.'

ON account of the frequent requests received at the Yerkes Observatory for lantern slides and prints from astronomical photographs, it has been thought advisable to make provision for supplying them. Mr. G. Willis Ritchey, Optician of the Observatory, who has had wide experience in making and copying astronomical negatives, has undertaken to furnish such photographs at moderate expense. He is prepared to supply lantern slides, transparencies and paper prints from any of the negatives in the collection of the Yerkes Observatory. Among the subjects available at the present time may be mentioned: Professor Hale's photographs of prominences, faculæ and other solar phenomena, and of stellar spectra; Professor Barnard's portrait-lens photographs of the Milky Way, nebulae, comets and meteors; Professor Burnham's photographs of the Moon, Winter and Summer views of Mt. Hamilton and the Lick Observatory; Mr. Ellerman's photographs of the buildings and instruments of the Yerkes Observatory; and Mr. Ritchey's Kenwood Observatory photographs of the Moon. A more complete list of subjects may be had on application to G. Willis Ritchey, Yerkes Observatory, Williams Bay, Wisconsin, to whom all orders should be addressed.

THE Vienna correspondent of the London *Times* telegraphs that some interesting particulars of a new application of the Röntgen rays for curative purposes were communicated by Dr. Edward Schiff, lecturer at the Vienna University, at the last sitting of the Imperial and Royal Medical Society. A series of experiments conducted by Dr. Schiff and his assistant proved

that these rays could be used for the cure of disease in a manner capable of perfect control by means of a more or less intense application for a longer or shorter period, producing reaction in the exact degree required. In this way it has been possible for the lecturer, on the one hand, to remove hair from parts of the body where it constituted a disfigurement without causing the slightest inflammation, while, on the other hand, he has been able to treat lupus with uniform success by means of an artificial inflammation, the intensity of which he was in a position to increase or reduce at will. The results secured by the new method both in the removal of superfluous hair and the treatment of lupus were demonstrated in the persons of some of Dr. Schiff's patients.

At the annual meeting of the Michigan Board of Health on April 8th the President, Mr. Frank Wells, made an address, the greater part of which related to the outbreaks of typhoid fever along the St. Clair and Detroit rivers, at Port Huron, St. Clair, Marine City, Detroit and Wyandotte, especially the recent one at the city of St. Clair. He was emphatic in his belief that the Board should enter upon a more thorough investigation of the waters of St. Clair river, with a view to ascertaining, if possible, where, when, under what circumstances, and how the river is contaminated, whether the contamination is intermittent or constant, what is the result of dredging the sewage sludge out of Black river at Port Huron, and whether the contaminations which constantly enter the river at Port Huron find their way into the water supplies of the cities along the river, and under what circumstances such contaminating material finds its way into the water supply of Detroit. The questions are of vital importance to the citizens residing along the St. Clair and Detroit rivers, and such investigations would be of inestimable value. The President said he knew that the funds at the disposal of the State Board were inadequate, but he hoped that the Board would see its way clear to pushing the investigation at least far enough to learn the importance of such work, when if it proves to be as important as he thought, the Legislature would undoubtedly do as they have in other States, make provision for having the investi-

gation properly made. The Secretary of the Board mentioned that he had had several samples of water from the river examined, from the river as it leaves Port Huron, from the river opposite the intake at St. Clair, from the water works in St. Clair, from a tap in St. Clair, and from the river as it leaves St. Clair. All of the samples were found to be contaminated.

THE following note from our literary contemporary, *The Critic*, may prove of interest to men of science: "One might enjoy the humor injected into the situation at the Castle Garden Aquarium, if it were not such a direct menace to the best interests of that admirable institution. If Col. James E. Jones has said all the things attributed to him by the papers, and there is no reason for doubting that he has, he should be keeping a fish-stand in Washington Market, rather than managing an aquarium that is designed to be of scientific benefit to the public. His predecessor, Dr. Bean, knew his business, and managed the interests of the Aquarium as it was intended they should be managed. He was not a Tammany man in politics nor in his methods. Hungry Tammanyites were after the office, however. Mr. Croker is said to have hinted to Dr. Bean that his salary was wanted for another man, but he refused to take the hint. Tammany has an excellent plan for securing any salary that it wants for its own people, when it cannot oust the person who is drawing it. The office is abolished—and afterwards re-created. The Tammany man is then put into the newly-created office, and all goes well—that is, as far as he is concerned; but it goes very ill for the public. Most of us thought that Dr. Bean was the right man in the right place, but we are told by his successor that he was 'too damn scientific to run an Aquarium.' That was a new view of the situation. Col. Jones has expressed other views quite as new and startling. He may know a hawk from a hernshaw, but he tells us quite frankly that he does not know much. He said to a *Times* reporter:

"Take those specimens of sea anemones, for instance. They're out there in the laboratory, and few know anything about them, and more care less. What

are they, a fish or a vegetable? I'm darned if I know, and I guess there are a whole lot like me.

"Col. Jones also confesses to being a 'jollier,' but adds that he will curb his 'jollyng' habit for a time at least, and attend to business. His favorites in the Aquarium are the seals, because they are 'just too funny for anything,' particularly one who 'squirts water over people.' Are they, I should like to know, any funnier than Col. Jones? He has said enough to cause his instant dismissal by any other government than one that made its way into power with the battle-cry, 'To Hell with reform.'"

A SCIENTIFIC expedition under the direction of Dr. Nordenskiöld has been organized in Sweden to explore the Klondike region. The expedition, the expenses of which will be defrayed by Mr. Elk, director of a large banking house in Stockholm, was expected to leave Sweden on March 23d. Dr. Gunnar Andersson, docent in geology in the high school at Stockholm, will accompany the party, which is expected to be absent about two years.

THE Government Statist of Victoria estimates the population of the Australasian colonies at the end of 1897 at 4,410,124. When the census of 1891 was taken the numbers were 3,809,895, so that there has been an increase since then of 15.75 per cent. The population of Victoria is estimated at 1,176,238, an increase of 35,833. The births exceeded the deaths during the period by 127,418, but the loss by emigration 91,000. The increase per cent. in Victoria was 3.14; in New South Wales, 16.89; in south Australia, 13.29, and in Western Australia, 225.23.

THE Council of the Imperial Institute have authorized the holding of an exhibition of acetylene-gas apparatus in the grounds of the Institute at an early date, and, in order to ensure that no apparatus should be admitted to the exhibition unless it was shown to fulfil the requisite conditions of safety, the Council of the Society of Arts have appointed a committee to decide upon those conditions and to lay down rules for the admission of apparatus. The following gentlemen have been appointed to act on this committee: Major-General Sir

Owen Tudor Burne (Chairman of the Council), Sir Frederick Bramwell, Professor James Dewar, Mr. Harry Jones, M. Inst. C. E., Professor Vivian B. Lewes, Professor Boverton Redwood, Professor W. C. Roberts-Austen, Professor J. M. Thomson and Sir Henry Trueman Wood (Secretary). Full particulars will shortly be issued as to the regulation and rules laid down.

A FEW weeks hence, says the *London Times*, work will be begun upon an important new building in the neighborhood of Dulwich—the Horniman Free Museum, which its founder, Mr. Frederick J. Horniman, M. P., intends to present as a free gift to the inhabitants of that neighborhood. The new building will consist of two galleries, each upwards of 100 feet long, lighted from the top. In addition, there will be a large lecture-hall having a seating capacity for 300 persons. Altogether, the museum, including the administrative block, will be some 300 feet in length, and will present a very handsome appearance, its front being constructed entirely in stone, with a clock tower of striking design, over 100 feet in height. The galleries will be divided into various courts, each devoted to a separate class of the interesting objects of which the museum proper consists. Thus there will be a pre-historic court, an Egyptian court, an Indian court, a colonial court, a Japanese court, and so-forth, while there will be special departments for the zoological and entomological specimens as well as for the large library. During the last 35 years Mr. Horniman has been acquiring the freeholds of the various properties adjacent to the house in which, for seven years, his collection has been on public view. The 15 acres so acquired he intends to convert into a public park and recreation ground, while Surrey Mount, an existing mansion therein—from which is to be obtained one of the finest views in the district—is to be fitted up as a free library and club house, separate rooms being devoted to the free use of the scientific and other clubs in the vicinity. The new museum, of which Mr. C. Harrison Townsend is the architect, will be within three or four minutes' walk of Lordship-lane and Forest-hill railway stations, and will thus be in the center of a rapidly extending neighborhood.

Since Mr. Horniman's collection was opened to the public, seven years ago, more than 455,000 people have visited it in its temporary home.

AT a meeting of the Trades League of Philadelphia on April 14th the following resolutions were adopted:

WHEREAS, There is at the present time no general system of sanitation and disinfection throughout the United States, guided and controlled by one general head and working in harmony with local and State Boards of Health; and

WHEREAS, The presence of an epidemic of contagious diseases in any part of the country without such general system of control breeds fear and panic, from a lack of confidence in the ability of the local Board of Health to control the epidemic within a contracted radius of territory; and

WHEREAS, Localities within hundreds of miles of the infected district quarantine against it and other places near it, thus resulting in enormous losses to commercial and transportation interests of the country at large; therefore, be it

Resolved, That the Trades League of Philadelphia, an organization of nearly two thousand business firms, earnestly recommend the establishment, by the National Government, of a commission of public health, to be known as the 'National Commission of Public Health,' which shall be a bureau in the Treasury Department, and the duties of which shall be to collect and disseminate information with regard to the prevalence of infectious diseases in this and other countries, to collect and publish vital statistics, to prepare rules and regulations for securing the best sanitary conditions of vessels from foreign ports and for preventing the introduction of infectious diseases into the United States and their spread from one State or Territory or the District of Columbia, and, in general, to make investigations, publish information and formulate rules with a view to the preservation of the public health.

Resolved, That the Legislative Committee of the Trades League shall give the subject their careful and prompt attention, with 'power to act' as the importance of the subject may demand.

In a recent lecture at the Royal Institution, London, on some analytical uses of liquid air, Professor Dewar stated, according to the account in the *London Times*, that low-temperature work has been greatly extended of late, and that both on the Continent and in America there had been a large development in the applications—or projected applications—of liquid

air. He proceeded to explain the use of this agent for the qualitative separation of the gases composing a mixture, and practically illustrated the method with a sample of the gas given off by the Bath springs, which was thus shown to contain argon, helium and a hydro-carbon that was liquid at ordinary temperatures. Referring to the cessation of chemical action with extreme cold, he said that photographic effects alone persisted, but had lost some 80 per cent. of their intensity. It was a curious fact that the photographic activity of ultra-violet light, though the greatest at ordinary temperatures, suffered most diminution at low ones. In conclusion the lecturer spoke of the thermal phenomena presented by the vacuum jacketed vessels, of which he introduced the employment. Pictet after an elaborate investigation concluded that below a certain temperature all substances had practically the same thermal transparency, and that a non-conducting body became as ineffective as a conducting one in shielding the vessel from heat. But Professor Dewar's experiments showed that such was not the case, the transference of heat observed by Pictet appearing to be due not so much to the materials themselves as to the air contained in their interstices. By filling the annular space between the walls of several similar vacuum vessels with various substances and exhausting them all equally of air, he found large differences in the thermal transparency of the substances, as measured by the rate of evaporation of liquid air contained in the tubes. Moreover, the thermal transparency of some materials diminished at very low temperatures instead of increasing, as had been asserted to be the case. Thus, of two vacuum tubes, one simple, the other having powdered carbon in the vacuous space, the latter at low temperature was the more efficient preserver of a liquid air, showing that the carbon diminished the radiation. But when the vacuum was destroyed and warm air admitted into the space, the liquid in the carbon tube boiled off much more vigorously than that in the simple tube, indicating that at an ordinary temperature carbon allowed more heat to pass than did air.

ONE of Dr. Linde's machines for the liquefaction of air, says the *London Times*, has been

exhibited at work in the rooms of the Society of Arts. Its action is based on the fact that air, not being a 'perfect gas,' is reduced in temperature when suddenly allowed to expand through a narrow orifice from a high to a low pressure. The slight cooling effect thus obtained is rendered cumulative by the cooled air being used to abstract heat from the air that has not yet passed the orifice. Each successive portion of air is, therefore, cooler when it reaches the orifice than was its predecessor, and thus in time so low a temperature is reached, provided due precautions are taken to insure thermal isolation, that a change of state occurs and air appears in the form of liquid. The particular machine on view circulates each hour about 15 cubic mètres of air, which is expanded from a pressure of 200 atmospheres to one of 16, and produces about 1.9 litres of liquid air an hour with a continuous expenditure of three-horse power. Although the oxygen and nitrogen of the atmosphere liquefy simultaneously, still the latter evaporates more quickly, and this fact can be utilized to obtain a liquid which is very rich in oxygen. An interesting application of liquid air containing 40 or 50 per cent. of oxygen has recently been made. Mixed with powdered charcoal it forms an explosive which is comparable in power to dynamite, and which, like dynamite, can be made to go off violently by using a detonator. Trials which have been carried out with this material in a coal mine at Penzburg, near Munich, are claimed to have given very satisfactory results. The explosive is cheap, its cost being practically that of liquefying air; but, of course, owing to evaporation, it is only capable of exploding for a few minutes after being mixed.

UNIVERSITY AND EDUCATIONAL NEWS.

PRESIDENT DWIGHT, of Yale University, has published his annual report. He suggests suitable gifts to the University amounting in value to over \$3,000,000, which he hopes may be secured in celebration of the coming bi-centennial. The value of the Lampson bequest is stated to be upwards of \$400,000. President Dwight especially dwells on the need of a building for the work in physiological chemistry, the need of

\$150,000, which, with the existing fund of \$100,000, will make possible the completion of the Peabody Museum and the desirability of enlarging the observatory. The library acquired by purchase during the year 7,840 volumes and by gift 1,385 volumes, and the pamphlets added to the library were 6,300 in number. During the past ten years the teaching force of the University has increased from 43 to 102.

THE Board of Overseers of Harvard College have adopted the following resolution:

Resolved, That the overseers will see with pleasure the admission requirements of the Lawrence Scientific School brought as rapidly as circumstance may permit to substantial equality with those of Harvard College, provided that, in so doing, the standard for admission to the Scientific School shall be steadily raised, and that for admission to the College in nowise lowered.

THE New York State Department of Public Instruction has decided to hold four summer schools this year for the teachers of the State. The past two years two schools have been held, at Chautauqua and Thousand Islands Park. The two additional schools will be held at Greenport, Long Island, and Ithaca.

THE West Virginia University has established eleven fellowships yielding \$300 yearly and free tuition. The fellows are expected to teach one hour a week or give two hours' supervision in the laboratory. In the eleven subjects for which the fellowships are awarded, the sciences are well represented, they being as follows: Chemistry, Physics, Geology, Zoology, Botany, Mathematics, Mechanical Engineering, Civil Engineering, Economics, English and Greek.

THE estate of Mrs. Julia W. James, of Boston, divided by her will between the Museum of Fine Arts and the Massachusetts Institute of Technology amounts to over \$500,000.

At Harvard University Mr. S. I. Bailey has been promoted to an associate professorship of astronomy and Dr. W. T. Porter to an associate professorship of physiology.

DR. NORMAN WILDE, assistant in philosophy in Columbia University, has been appointed instructor in philosophy in the University of Minnesota.

THE John Tyndall Fellowship of Columbia