THE French government is proposing to erect an observatory and wireless station on Mount Salève which towers 4,000 feet above Geneva. The observatory is to be installed with all modern instruments for meteorological and seismographic observation and research work. A telescope with a lens diameter of two and a half meters is now being constructed in the United States. Eventually it is hoped the station will become the seat of a meteorological office, and it is for that reason the wireless station proposed will be powerful enough to communicate with any part of the world.

THE trustees of the Polar Research branch of the Captain Scott memorial—the Lord Mayor, Sir Charles Sherrington, president of the Royal Society, and Lord Ronaldshay, president of the Royal Geographical Society—have decided to offer to hand over the balance of their fund, amounting to £13,000, to the University of Cambridge towards the erection, endowment and maintenance of a "Captain Scott Polar Research Institute." The institute, established in 1920, has so far been housed in the Sedgwick Museum, and has done good work in advising and assisting in connection with some smaller expeditions in the last four years. It has also, from grants made from the Scott Fund, been acquiring maps, sketches and publications connected with Polar research.

THE United States Civil Service Commission announces competitive examination for the position of chemical engineer to fill a vacancy in the Fixed Nitrogen Research Laboratory, Department of Agriculture, Washington, D. C. The entrance salary is $3,800 a year and advancement in pay may be made without change in assignment up to $5,000. Competitors will not be required to report for examination at any place, but will be rated on their education, training, experience, fitness and writings to be filed with the application, which should be filed before May 19.

TENTATIVE plans have been made for the organization of the American Refractories Institute, to provide a satisfactory contact between all the industries that use and manufacture refractories, in order to meet their various economic and technical problems with respect to heat-resisting materials and to maintain a research laboratory to study the problems of the consumer and the manufacturer. MacDonald C. Booze, senior incumbent of the Multiple Industrial Fellowship on Refractories at the Mellon Institute of Industrial Research, Pittsburgh, has been appointed temporary secretary of the organizing committee.

THE Norwich Castle Museum Committee of the City Corporation has under consideration, as we learn from *Nature*, the celebration of the centenary of the foundation of the museum under the presidency of the Norwich botanist, Sir James Edward Smith, F.R.S., in 1825. The history of the museum shows that its fortunes were of a varying character until 1894, when the corporation took over the collections of the Museum Society and housed them in the spacious galleries adjacent to the castle.

THE *Chemical Bulletin* states that a bill has been introduced in the Wisconsin legislature the purpose of which is to give scientific assistance to district attorneys in the investigation and solution of crimes. According to the terms of the bill power is to be given, under the provisions of the contemplated act, to the attorney general to appoint a group of scientific men who by education and experience are qualified to render impartial and valuable assistance in the investigation of crimes occurring in that state. Chemists, physicians, toxicologists, bacteriologists, pathologists, metallographers, finger-print and hand-writing experts, psychiatrists, and so forth, would be included in the list. No new commission is to be created nor are such experts to receive compensation from the state. The county calling for their services is to pay them a per diem fee as may be arranged in each case.

THE British Safety in Mines Research Board, in the course of an inquiry into the possibility of improving the present official tests of explosives intended for use in gassy or dusty coal mines in Britain, has arranged for seven typical British "permitted" explosives to be put to the official American tests, which differ in many respects from the British tests. The British explosives have passed the American tests, but the British "permitted" explosives were not so strong as the American when judged by the specified strength tests, nor so sensitive to detonation as judged by the explosion by influence test. This is attributed to the fact that the British explosives contain as a rule a far higher proportion of cooling salts.

UNIVERSITY AND EDUCATIONAL NOTES

THE University of Chicago has received a gift of $500,000 from the Wiebolt Foundation toward the development fund of $17,500,000, which is now being collected by the university.

THE New Jersey Legislature has appropriated two hundred thousand dollars for the erection of a new physics building for Rutgers College.

THE Iowa Child Welfare Research Station of the University of Iowa has received a grant of $133,500 from the Laura Spelman Rockefeller Memorial Fund to be used for research in the development of children.

DR. WILLIAM T. SANGER, secretary of the Virginia State Board of Education, has been elected president of the Medical College of Virginia in succession to Dr. Stuart McGuire.

DR. LESLIE B. AREY, recently appointed chairman of the division of anatomy at the Northwestern University Medical School, has been made the first incumbent of the newly established Robert Laughlin Rea professorship in anatomy. This chair was created through the gift of $100,00 by MRS. Mollie Manlove Rea as a memorial to her husband, at one time professor of anatomy in the university.

DR. HARRY C. TRIMBLE, assistant professor of chemistry at the University of North Dakota, has resigned to become assistant professor of chemistry at the Harvard University Medical School.

DR. ALEXANDER ELLETT, National Research Fellow, who has been working at the Bureau of Standards, has been appointed assistant professor of physics at the University of Iowa.

DR. WILSON L. MISER, associate professor of mathematics, Armour Institute of Technology, has been appointed professor of mathematics at Vanderbilt University.

DISCUSSION AND CORRESPONDENCE

SERIES IN THE ARC SPECTRUM OF NITROGEN

IN the issue of SCIENCE for September 12, 1924, I presented some series regularities which I attributed to the quintet system of the spark spectrum of nitrogen. Quite recently Merton and Pilley (*Proc. Roy. Soc.*, A 107, p. 416, 1925) have published an excellent list of lines which they attribute to the *arc* spectrum of nitrogen. The occurrence of multiplets among these lines involving the same terms as occur in the infra-red multiplets has led to the conclusion that the infra-red lines are also members of the arc spectrum, and that the multiplets previously published belong to the quartet system and not to the quintet system. An analysis of Merton and Pilley's lines and additional infra-red lines measured at the Bureau of Standards has revealed the existence in the arc spectrum of nitrogen of doublet and quartet series systems consisting of combinations between P, P′, S, D and F, terms. In each system the lowest term so far found is a P term. Three PD multiplets of the quartet system have been found which can be represented very accurately by a Ritz formula, giving a value of 33992 to the low $^4P_3$ term. The details of the investigation will be presented in a forthcoming paper.

C. C. KIESS

THE UNDERTOW

THERE are many geologists grateful to Professor Davis[1] for calling attention to the rather careless acceptance of the undertow without adequate consideration of what it is and where it is. Everybody will agree with him that there is an undertow phenomenon produced in every wave trough, that the undertow becomes exceptionally concentrated and powerful off pocket beaches, that when the wind is blowing on shore the undertow effects are greatest, and that there is commonly confusion between undertow, littoral currents and tidal currents. However, it should be borne in mind that sea waves are of two kinds: deep sea waves which are oscillatory and which involve theoretically no translation of water longitudinally, and roll waves in which there is no oscillation and a maximum amount of translation of water. The reality of the undertow becomes evident when one considers the case of waves approaching the shore at time of low tide. For a distance upon shallow shores of half a mile there is a constantly renewed pouring shoreward of water where the oscillatory waves change into roll waves. This series of forward surging roll waves actually achieves a shoreward movement of water of prodigious quantity which returns to the sea only as undertow.

The very configuration of a shore indicates the reality of undertow. Material eroded and broken loose by wave action lies exposed at the shore, but although shingle forms well-marked beaches, it is not usually distributed upon the wave-cut terrace. In some manner the broken material is carried away from the beach, across the wave-cut terrace, and deposited in the wave-built terrace. Although it is certain that the undertow is notably concentrated at pocket beaches, nevertheless it is in existence elsewhere as wave-cut terraces and the wave-built terraces which skirt cliff bound shores past bay and headland alike clearly demonstrate. There seems little question that confusion between littoral currents, tidal currents and undertow is very difficult to avoid because they are all in existence at certain times in the same places.

Nevertheless, wherever waves break, irrespective of the direction of wind or shape of the shore line, there is a forward movement of water at the surface which can return only as an undertow; over wave-cut terraces where oscillatory waves are rare and where waves of translation are the rule the total amount of undertow return must be great and extensive in a direction offshore.

T. T. QUIRKE

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[1] W. M. Davis, SCIENCE, Vol. LXI., February 20, 1925, pp. 206–208.