

battery was left open. Now the latter circuit is also closed, and with this result—that the index gives a sudden great jump in the direction showing contraction, and then, immediately moving in the opposite direction to that signifying contraction, takes up a position on the other side of zero—at 15° or 20° , it may be—a movement showing, not contraction, therefore, but elongation. Eliminating, as non-essential, the strong contraction which happens at the closing of the circuit—for this has to do, not with anelectrotonus, but with the *extra-current* which traverses the nerve between the poles at the closing of the voltaic circuit—what happens, therefore, on the establishment of anelectrotonus is, first, *suspension of the tetanus* caused by the feeble faradaic currents; and, secondly, *elongation of muscle*. This is the second step of the experiment, and these the results.

The third step follows upon the second. Its object is to ascertain whether the tetanus may be made to return during anelectrotonus by slightly increasing the strength of the faradaic currents acting upon the nerve; and the way of arriving at this is to leave the voltaic circuit still closed, to go on moving the secondary coil of the induction apparatus nearer to the primary, and to stop the moment the faradaic currents acquire strength enough to call back any tetanus. And this is what happens—that after moving the secondary coil but a short distance towards the primary, the index shows, not only that the tetanus has reappeared, but that it has reappeared in greater force. Before the establishment of anelectrotonus, the tetanus caused by faradaic currents only just strong enough to tetanise the muscle carried the index to 20° or thereabouts; after the establishment, the tetanus caused by faradaic currents only just strong enough to exert a tetanising action moved the index to 45° or 60° . In a word, contraction may happen in anelectrotonus, and when it happens it is considerably increased in amount. This is the third step of the experiment, and this the result.

In the experiment for exhibiting the phenomena of cathelectrotonus—that in which the negative voltaic pole is placed next to the insertion of the nerve into the muscle—all the steps are the same, and so are the results. The setting up of cathelectrotonus suspends the tetanus caused by feeble faradaic currents, and causes elongation in the muscle. The tetanus brought back during the cathelectrotonus by currents only just strong enough to have a tetanising action is in increased force. The degree of elongation is the same as in anelectrotonus. The increase of contraction is the same as in anelectrotonus. The only difference, indeed, between the two experiments is this, that somewhat feebler faradaic currents serve to recall the tetanus in cathelectrotonus than those which were required to do this in anelectrotonus.

Nor are these facts at variance with those which are brought to light when the state of electrotonus is produced by a smaller amount of battery power—by a single element, for example. In this case it often happens (not always) that the tetanus caused by salt or very feeble faradaic currents is suspended by anelectrotonus, and intensified by cathelectrotonus. It seems as if there was an essential difference between this action of the two electrotonic states upon nerve and muscle, but after what has just been seen this is by no means a necessary conclusion. It has been seen that anelectrotonus has a greater power of suspending tetanus than cathelectrotonus, therefore tetanus may be suspended by anelectrotonus when it is not suspended by cathelectrotonus. It has been seen that during both anelectrotonus and cathelectrotonus contraction when it happens is greater than that which happens in the non-electrotonised state; and therefore, during cathelectrotonus, if tetanus be not suspended, it is likely to be intensified. This is all. The facts are in keeping with those which have gone before when they are properly looked into, and there is no ground in them

for supposing that there is an essential difference between the action of anelectrotonus and cathelectrotonus—no ground for supposing that the effects of using a small battery power in the production of electrotonus are in any way different from those which attend the use of a larger power of this kind.

C. B. RADCLIFFE

CONJOINT MEDICAL EXAMINATIONS*

WE are able to open the new year with the satisfactory announcement that the last difficulty has been removed which impeded the action of the great medical examining incorporations of England in uniting to frame a conjoint scheme for a minimum examination, which will constitute, in fact, a single and uniform portal to the profession. All the committees of the bodies concerned have signified their approval of the following scheme:—

In view of the legal difficulties which have been stated by the Society of Apothecaries to prevent that society taking part in the formation of an examining board in this division of the United Kingdom, it was resolved:

I. That a board of examiners be appointed in this division of the United Kingdom by the co-operation of the Royal College of Physicians of London, the Royal College of Surgeons of England, and of such other of the medical authorities in England, mentioned in Schedule (A) to the Medical Act, as may take part in its formation; it being understood that, liberty being left to such co-operating medical authorities to confer, as they think proper, their honorary distinctions and degrees, each of them will abstain from the exercise of its independent privilege of giving admission to the "Medical Register."

II. That the Board be constituted of examiners, or of examiners and assessors appointed by the several co-operating medical authorities.

III. That examiners be appointed on the following subjects: Anatomy and physiology; chemistry; materia medica, medical botany, and pharmacy; forensic medicine; surgery; medicine; midwifery; or on such subjects as may be hereafter required.

IV. That no examiner hold office more than five successive years, and that no examiner who has continued in office for that period be eligible for re-election until after the expiration of one year.

V. That the examiners be appointed annually by the several co-operating medical authorities on the nomination of a committee, called herein "The Committee of Reference;" but no member of the Committee of Reference shall be eligible for nomination as an examiner.

VI. That a Committee of Reference, to consist of an equal number of representatives of medicine and surgery, be appointed as follows: One representative of medicine and one representative of surgery to be appointed by each of the Universities in England; four representatives of medicine to be appointed by the Royal College of Physicians of London; four representatives of surgery to be appointed by the Royal College of Surgeons of England.

VII. That one-fourth of the Committee of Reference go out of office annually, and that, after the first four years, no retiring member be re-eligible until after the expiration of one year.

VIII. That the duties of the Committee of Reference be generally as follows: 1. To determine the number of examiners to be assigned to each subject of examination. 2. To nominate the examiners for appointment by the several co-operating medical authorities. 3. To arrange and superintend all matters relating to the examinations, in accordance with regulations approved by the co-operating medical authorities. 4. To consider such questions in relation to the examinations as they may think fit, or such as shall be referred to them by any of the co-ope-

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rating medical authorities, and to report their proceedings to all the said authorities.

IX. That there be two or more examinations on professional subjects, and that the fees of candidates be not less than thirty guineas to be paid in two or more payments.

X. That every matriculated student of an English university who shall have completed the curriculum of study required by his university, and shall have passed such an examination, or examinations, at his university as shall comprise the subjects of the primary examination, or examinations, conducted by the Board, be eligible for admission to the final examination; and that every candidate so admissible to examination be required to pay a fee of five guineas, but he shall not be thereby entitled to the license of the Royal College of Physicians of London, nor to the diploma of member of the Royal College of Surgeons of England, without the payment of an additional fee of not less than twenty-five guineas.

XI. That every candidate who shall have passed the final examination conducted by the Board shall, subject to the by-laws of each licensing body, be entitled to receive the license of the Royal College of Physician of London, and the diploma of member of the Royal College of Surgeons of England.

This is signed by George Burrows, President of the Royal College of Physicians, and George Busk, President of the Royal College of Surgeons.

Sir Roundell Palmer, Mr. Denman, and Mr. Bevis have given their opinion that this scheme can be legally carried into effect by means of by-laws to be adopted by the respective Colleges of Physicians and Surgeons. This opinion was presented at the meeting of the Joint Committee on the 3rd inst. The examiners in surgery will be chosen from among the examiners who have been appointed under the charters of the College of Surgeons, and the Court of Examiners will adopt the certificate of the new examining body.

Meetings are being held in Dublin with a view to the formation of a conjoint examining board for Ireland. So far, no insurmountable difficulty has arisen in the several matters which have come under the notice of the deputed representatives of the Universities and of the other licensing bodies, and it is hoped that the board, as proposed, will become an accomplished fact. A claim was put forward by the Universities that the first part of the professional examination conducted by the conjoint board should not be required of university students who had passed their examination on the same subjects; and that in their case the examination should be confined to the final one. To this, however, the other licensing bodies properly objected; but an offer has been made by the other corporations that the preliminary examination should be wholly conducted by examiners appointed by the Universities.

NOTES

THE celebrated ethnological collection of the late Dr. Gustavus Klemm, of Dresden, which had obtained a world-wide celebrity from its richness in illustrations of dress and ornaments, household utensils, furniture, warlike, fishing, and hunting implements, &c., extending from the earliest times down to the immediate present, has been purchased by subscription, and transferred to Leipsic, where it forms the nucleus of the new German Central Museum of Ethnology, and around which is to be grouped whatever additional material can be procured in illustration of the general plan. An earnest appeal is made by the officers and others interested in this enterprise to their countrymen and others in the United States for contributions. It will occupy the place in Germany of the great Archæological Museum of Copenhagen: of that of Mr. Blackmore at Salisbury, in England;

of the Museum of St. Germain, near Paris, under direction of M. Mortillet; and of the Smithsonian and Peabody Museums in the United States.

THE Exhibition of Neolithic Instruments by the Society of Antiquaries at Somerset House will be re-opened to-morrow, and will finally close on Thursday, January 18. For tickets apply at the Society's apartments.

ON Saturday last, at an early hour in the morning, the female hippopotamus in the Zoological Society's gardens gave birth to a young one—being the second occasion on which this interesting occurrence has taken place. As in the former case, it has been found necessary to close the building in which the female is placed entirely, not even the keepers entering into it except when absolutely necessary, in consequence of the extreme savageness and jealousy exhibited by the fond mother. Some days must therefore elapse before the "little stranger" can be prepared to undergo the ordeal of public exhibition.

ANOTHER interesting addition just made to the Zoological Society's collection is a young specimen of the King Penguin (*Apteryodes pennanti*) from the Falkland Islands. For this remarkable bird, which is still in the down-plumage, the Society are indebted to the kind exertions of F. E. Cobb, Manager of the Falkland Islands Company, who has been for some time endeavouring to obtain living examples of this species for the Society. The King Penguin is placed in the great eastern aviary, along with a specimen of the Cape Penguin (*Spheniscus demersus*) which has been for some time under the Society's care.

WE have just received the fourth report of the Radcliffe Trustees from the Radcliffe Librarian, Dr. Henry W. Acland, including also a catalogue of the transactions of societies, periodicals, and memoirs, available for the use of professors and of students in the Library; a catalogue of books recommended to students in physical science by the museum professors; and the Regulations of the Library. The additions to the Library are made, as far as the annual grant of 500*l.* will allow, either on the judgment of the librarian as to the intrinsic value of a work, or on the advice of a professor, or upon the knowledge that students require it.

It is stated that the average yearly number of visitors at the South Kensington Museum during the last five years has been 905,084.

THE University Court of the University of Edinburgh, at a meeting held on Tuesday, Jan. 2, declined to give effect to the recommendation of the Senatus, that the regulations in reference to the medical education of women should be rescinded. The Court guarded itself against being understood to indicate any opinion as to the claim of women to proceed to graduation, or as to the powers of the University to confer on women degrees in the faculty of medicine.

THE Second Course of Cantor Lectures of the Society of Arts for the session will be delivered by the Rev. Arthur Rigg, M.A., on "Mechanism." The first lecture will be given on Monday evening, Feb. 5, at eight o'clock, and the remainder of the course will follow on the five succeeding Monday evenings.

AT the annual meeting of the Birkbeck Literary and Scientific Institution, Sir John Pakington, M.P., in the chair, it was stated that, during the past year, the following new subjects have been introduced into the curriculum of the Institution:—Acoustics, Light and Heat, Practical Chemistry, Mineralogy, Metallurgy, and the Theory of Music.

THE authorities of the American Museum of Natural History, at the Central Park in New York, have set apart Monday and Tuesday especially for the use of those persons who may desire