followed by experiments with 'K' powder kindly sent to us by Dr. Kendall. A protocol suggested by him, using the Rawlins strain of *B. typhosus,* was followed exactly. At least five attempts in accordance with this protocol and many more based on the first reports of the medium were made.

In connection with the 'K' medium, many difficulties were encountered; for example, no uniformity of pH from tube to tube could be attained. It also occasionally develops a spontaneous turbidity without inoculation.

In summary we may state that persistent efforts to confirm Dr. Kendall's experiments have been uniformly negative.

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UNIVALENT CHROMOSOMES OF TRADESCANTIA VIRGINIANA

AN esteemed correspondent, in SCIENCE (Vol. 77, pp. 49–50), states that, in *Tradescantia virginiana,* "the apparently serially arranged, miscalled univalent chromosomes represent in reality a segmented pachytene in which the synaptic pairs are lined up, back to back." I have lately been studying the pachytene of this species, and also of *Rhoeo discolor:* and have succeeded in obtaining clear preparations. In Rhoeo, only the sub-terminal parts of the 12 chromosomes synapse; and are afterwards seen at diplotene to separate, leaving terminal junctions. Thus the 12 bodies seen in the rings appear to me to be these univalents attached at the ends. For if they were "pairs . . . back to back," there would be, I think, 6 of them. In *Tradescantia virginiana* (which is, in my opinion, rightly regarded as a tetraploid), 12 of the 24 chromosomes can be seen to have synapsed, at pachytene, with their 12 homologues; while their sub-terminal parts show synapsis between 4 chromosomes. These can be seen to separate at diplotene, except for their terminal junctions. The 24 bodies seen in rings, in chains, or singly, are, I think, the univalents. For if they were "pairs . . . back to back," there would be apparently 12 of them.

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SPECIAL CORRESPONDENCE

UNIVERSITY EXPEDITION TO STUDY THE NATIVES OF CENTRAL AUSTRALIA

IN August, 1932, an expedition to study the natives of Central Australia was organized by the Board for Anthropological Research of the University of Adelaide, in conjunction with the South Australian Museum. The expenses were chiefly met by a grant from the Rockefeller Foundation, administered through the Australian National Research Council. The situation chosen on this occasion was Mount Liebig, situated almost on the Tropic of Capricorn, 200 miles by track west of Alice Springs. The natives belonging to this portion of Central Australia have hitherto escaped contact with Europeans, save to a very superficial extent. By means of a preliminary survey by Mr. Kramer, of the Aborigines Friends Association, in whom these natives had complete confidence, over 130 aborigines, including men, women and children, were gathered together for observation. Their equilibrium had been a little disturbed by a raid from an adjacent tribe, in which 7 men had traveled 100 miles to secure two women, killing their common husbands and one of the women, and abducting the other.

The personnel of the expedition included amongst others Dr. T. D. Campbell, to whom much of the credit of its success is due, Professors T. Harvey Johnston, C. S. Hicks and J. B. Cleland, Dr. H. K. Fry, Mr. H. M. Hale, director of the South Australian Museum, and Messrs. N. B. Tindale and J. H. Gray. As on previous occasions, the natives submitted themselves to many kinds of tests, some of them very trying, without the slightest murmur or objection.

Their good humor and sense of fun were again shown to a striking degree. Not the slightest attempt was made by any native to abstract articles from the camp, even though they could very easily have done so and must have coveted many of the objects seen. Any article accidentally lost by the party was almost invariably found by the natives and returned; one member, whilst watching a corroboree at night, dropped, without knowing it, two postage stamps; these were picked up and returned to camp, evidently being recognized as something unusual.

As the expedition had only a short time at its disposal, the study of the natives had to be concentrated. In physical anthropology this is an advantage; the native readily tires and novelty soon wears off. It would be probably difficult to hold together a body of 100 natives for a period as long as a month; many would desire before then to go for a "walk about."

Professor Hicks with his assistants studied each day the basal metabolism of two fresh natives. This was accompanied by a close study of the pulse and respiration rates, and of the body and skin temperatures throughout the morning as the warmth increased.

[1] Died February 28, 1933.

The natives were weighed and measured according to the Du Bois linear formula method of determining surface area, as well as for standing and sitting heights. Blood pressures were also measured, and katathermometer readings and wet and dry temperature measurements were obtained to give a basis for computing cooling power. When these data and those obtained previously are worked out it is hoped that conclusions may be drawn as to whether there is a true racial variation in basal metabolism; and whether the specific dynamic effect of protein meals on these natives, living with so little margin above a bare sustenance, is the same as for civilized Europeans; and that other important information will be obtained.

Blood-grouping showed again that only Groups A and O occur amongst the Central Australian natives. Out of 84 examined, 32 belonged to Group O and 52 to Group A.

Dr. Fry found that the class system of the Pintubi, which composed the majority of the natives, was of the 4-class nomenclature, but with the additional recognition of the 8-class of the adjacent Loritja. The legends and songs in relation to five ceremonies were obtained, together with their translations. Conception stories and dreams were obtained from five mothers.

Three hundred photographs were taken, which included standard photographs of bust and full-length, and a number of others concerning ceremonial records, pathological data and special features. Complete plaster casts were secured of the busts, including the faces, of two old men, of two young men, of two adult women, of one young woman, and of one newly born male baby; and a face cast of one young woman.

Pathological observations were recorded. The presence in some subjects to a slight degree of boomerang legs, and in several instances a soft enlargement of the parotid glands on each side was noted. Almost without exception pediculi were present in the hair.

It is the custom amongst these people for the mother to kill at birth an infant who is born whilst she is suckling its predecessor. The new-born baby, whose plaster cast was obtained, had been killed by its mother and stuffed into a rabbit's burrow, almost at the moment of arrival of the expedition at Mt. Liebig. Next day members became aware of this event, and with the concurrence of the natives and their assistance the body of the baby was unearthed and a complete description of it obtained. The placenta was attached. Soil or ashes are placed in the baby's mouth to stop its cries before the mother kills it.

Dr. T. D. Campbell and Mr. H. Gray obtained further standard records of measurements of adults and children, together with samples of hair, outlines of hair tracts, notes on the teeth and on the color of the skin, hair and eyes, and special information as regards the curve of the spine, shape of the foot, etc. The peculiar rubbery texture of the soles of the feet was again seen in a number of natives, but not in all.

Extensive cinematograph records were obtained of ceremonies, of daily occupations, of collecting and preparing foods, of making weapons and utensils, and of the meeting of two friendly parties of natives. Various animal and vegetable foods used by these natives were collected.

A meteorological equipment was taken and a very useful set of climatic records was obtained. Other incidental studies, such as geology and physiography, helped in an appreciation of the natives' physical environment.

The expedition proved successful, and has emphasized the value of team-work and the amount of information that can be collected in a short period of time by an intensive study.

J. B. CLELAND

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A UNIVERSAL DILATOMETER

SINCE the publication of Ostwald's work on "Volume Chemistry" in 1877, several papers have appeared, discussing from a theoretical and experimental point of view the change of volume which takes place during the process of neutralization of an acid by a base. Ostwald[1] first noticed the phenomenon and investigated its relation to the nature of the acid and of the base. His work was extended and confirmed by Ruppin.[2] The influence of the concentration was then studied by Tammann,[3] who worked with solutions of concentrations between 0.1 and 0.005 normal and who proposed an hypothesis to explain the change of volume. An extensive experimental investigation was later carried out by Miss Freund,[4] who concerned herself with the influence of temperature and of the concentration at higher concentrations than those with which Tammann had worked. During the course of a physico-chemical study of the process of neutralization, Cornec[5] determined the densities of mixtures of solutions of potassium hydroxide and

[1] W. Ostwald, *Jour. prakt. Chem.*, 16: 385, 1877.
[2] E. Ruppin, *Zeit. physik. Chem.*, 14: 467, 1894.
[3] G. Tammann, *Zeit. physik. Chem.*, 16: 91, 139, 1895.
[4] I. Freund, *Zeit. physik. Chem.*, 66: 555, 1909.
[5] E. Cornec, *Ann. chim. phys.*, (8) 29: 490, 1913.