

18. Meckel's ganglion in the embryo is closely connected with the otic ganglion.

19. The inferior maxillary nerve is at first unbranched.

20. The first formed part of the inferior maxillary represents the inferior dental of the adult.

21. The lingual nerve is formed later, and is still very small in the fifth week.

22. Meckel's cartilage presents a close relation to the branches of the inferior maxillary nerve, and seems to determine the directions which they take.

23. All the important branches of the inferior maxillary nerve are represented in the embryo at the beginning of the sixth week.

24. At the beginning of the sixth week the otic and submaxillary ganglia are present.

25. The chorda-tympani, the Vidian, and the nerve of Jacobson are not branches of the fifth nerve, inasmuch as they are not developed from it.

26. The chorda-tympani and Vidian nerves are branches of the facial, being developmentally derived from this nerve; the nerve of Jacobson is in like manner a branch of the glossopharyngeal.

27. The origin of these nerves in man is precisely similar to that of the corresponding nerves in the rat.

28. There is no direct evidence to prove that the cells of the accessory ganglia of the fifth nerve are derived directly from the cells of the Gasserian ganglion.

29. The sympathetic associated with the carotid artery in the adult is represented in the embryo by fibres chiefly derived from the trunk ganglion of the vagus nerve.

X. "Is Argon contained in Vegetable or Animal Substances?"

By GEORGE W. MACDONALD, M.Sc., and ALEX. M. KELLAS, B.Sc. Communicated by Professor WILLIAM RAMSAY, F.R.S. Received March 19, 1895.

At Professor Ramsay's suggestion, experiments were undertaken to see whether argon could be obtained from nitrogenous vegetables or from animal tissues.

Method :—A few grams of the substance, after drying if necessary, were ground to a fine powder, desiccated at 110° C., until the weight was constant, and a nitrogen estimation performed by Dumas' method. It was supposed that any argon compound would be decomposed, when the argon would come off along with the nitrogen. The gas was collected in a nitrometer over well-boiled concentrated

potash solution, whence it was transferred to a small gasholder containing water which had been boiled for some hours. The gasholder was connected with an apparatus similar in general arrangement to that used by Professor Ramsay in July last, which enabled the gas to be dried and purified from hydrocarbons, carbon monoxide or hydrogen, the nitrogen being absorbed by being passed and repassed over magnesium turnings kept at a temperature of about 600° C. A three-way stopcock enabled the magnesium tube and the purifying and drying tubes adjoining it to be connected either with the second gasholder or with a "Sprengel," so that any residual gas could be pumped off, and the tubes exhausted before admitting the gas. The gas pumped off was collected in a piece of hard glass tubing; it was then mixed with oxygen prepared by heating potassium permanganate, and sparked down until no further diminution of volume occurred, when excess of oxygen was known to be present. The remaining gas was transferred by a gas pipette to a tube standing over mercury, and the oxygen present absorbed by potassium pyrogallate solution. Only one experiment was carried through to the end in each case as the results seemed conclusive, although several determinations of nitrogen were made.

Peas were selected as a typical vegetable, and the following is a summary of the results:—

Expt.	Weight of desiccated peas taken.	Volume of nitrogen collected (corrected for temp. and press.).	Weight of nitrogen.	Percentage of nitrogen in dried peas.
1	grams. 8·9446	c.c. 465·8	gram. 0·5843	6·53
2	8·9455	466·8	0·5856	6·55

342 c.c. of the volume collected in the first experiment (which was done in two parts) was passed over the heated magnesium until so much nitrogen was absorbed that both gasholders were full of water, and the residue was then left for about 12 minutes in the tubes, the magnesium being kept heated so that absorption of nitrogen might continue. On connecting with the pump, a pressure of about 2 in. was registered, and the volume of gas pumped off had a volume of nearly 8 c.c. After sparking down with excess of oxygen 6·8 c.c. of gas was left, and on absorbing by a strong solution of potassium pyrogallate (stronger than Hempel recommends for complete absorption) 0·12 c.c. of gas remained, which is less than 0·04 per cent. of the volume taken. To see if this bubble of gas consisted of carbon monoxide, two experiments were performed with the oxygen

used: 9 c.c. gave 0.2 c.c. residue, and 11.2 c.c. gave 0.25 c.c. residue, with about the same strength of pyrogallate.

As the quantity of oxygen used in sparking down was over 20 c.c. it might safely be concluded that there is no appreciable quantity of argon in peas (or at least that the argon cannot be obtained with the nitrogen by Dumas' method).

The experiment with regard to the presence of argon in animal tissues was also negative in its results. Mice were selected for the experiment, because the nitrogen from the whole animal could be conveniently collected by Dumas' method. The crucial experiment was carried out in the same way as before.

From three mice 550 c.c. of nitrogen was obtained. This was absorbed by heated magnesium as usual, but the residual gas was left for over an hour in the tubes after the gasholders had been emptied, so that on connecting up with the pump only a few mm. of pressure was registered, and the total gas pumped off occupied about 1 c.c. After sparking down with large excess of oxygen about 10 c.c. remained, which gave a residue of 0.2 c.c. with alkaline pyrogallate, which would be about 0.036 per cent. of the volume taken.

Very careful experiments were undertaken to determine the exact percentage of nitrogen contained in mice, as the volume from the first experiments seemed too high. Two experiments with complete mice gave the following results:—

	Weight of mouse.	Percentage of water lost at 110° C.	Percentage of nitrogen in desiccated animal.
A	grams. 13.7	73.1	11.0
B	12.5	70.5	10.6

A Kjeldahl determination of the nitrogen in a small quantity of mouse A, by Mr. Frye, gave 9.6 per cent., so that the high percentage seems confirmed.

The Society then adjourned over the Easter Recess to Thursday, April 25.