capture a brood of eight young adders. They measured 4½ inches in length and six are females and two males.

The young adders were all normal specimens except one, which had malformation of the maxilla and palate. It was not so active as the others, which very soon after birth developed a marked biting tendency. The viciousness of these creatures prompted me to test their toxicological properties. So I got them to bite an ordinary microscopic slide, when I found that no secretion was produced until the third day after birth. I mixed some of the venom with fresh pig's blood, and microscopic examination of the slide revealed that the blood underwent a comparatively rapid hæmolytic and agglutinative change, indicating that the poison in this short period had acquired its maximum potency.

This in itself is an interesting observation and worthy of being placed on record, since it established that the degree of virulence of adder's poison is not proportionately in keeping with the degree of the physical development of the creature.

I have said in another place that adders will not feed in captivity, but I thought that these youngsters might be induced to take food, because in their case they had no knowledge of the freedom of wild life: their world was circumscribed by the confines of their cage. One would therefore imagine that they would respond to Nature's call for sustenance; consequently I made special efforts to coax them to take suitable nourishment, but my efforts were fruitless: they stolidly refused to touch a morsel of food.

Mother and family are still alive and well; for adders will live for a long time without taking any food. The hibernation period begins early in October, and although it is now the 22nd of that month, these creatures show no sign of becoming sleepy or torpid. Adders will not hibernate in captivity.

I should like to mention that the female adder did not show any maternal instinct towards her offspring. This may have been due to the reptile being in captivity.

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Components of Air in Relation to Animal Life.

OXYGEN, since the time of Lavoisier, has been considered the vital component of the air: the 79·19 per cent inert part has had little use assigned it. Popular opinion had stated that animal life would be more efficient if these inert gases were replaced by oxygen. Carefully conducted experiments covering a period of six years have shown the following facts in regard to animal life and the components of the air.

Animals cannot live in an atmosphere of oxygen, nitrogen, carbon dioxide, helium, or argon alone. A series of thirty experiments, using representative varieties of animal life, has shown that in an atmosphere of pure oxygen with other conditions normal, life would cease after two to five days. As could be expected, the inert gases would not support life.

An examination of the lung tissue from a guinea-pig which had died in an atmosphere of pure oxygen showed marked evidences of inflammation and interstitial hæmorrhages. Cultures made from the lung tissue showed a heavy infection of *Bacillus coli* associated with a few staphylococci. The conclusion drawn from the autopsy was that an atmosphere of oxygen should not only rupture the lung tissue but also accelerate the growth of certain micro-organisms.

Animals were placed in an atmosphere of 99·97 per cent oxygen and the normal 0·03 per cent carbon dioxide. Death followed within two to five days as in the oxygen experiments.

An atmosphere was prepared which contained 87 per cent argon and 13 per cent oxygen. Mice lived forty-two hours under this condition. The respiration of the animals decreased slowly until death.

Argon 80 per cent and oxygen 20 per cent permitted life for ninety-two hours.

Argon 75 per cent and oxygen 25 per cent supported normal life. After ten days of confinement the animals appeared in better health than before the experiment. An atmosphere made up of 66⅔ per cent argon and 33⅓ per cent oxygen supported life. The animals after seven days' confinement were in poor health. The point of highest efficiency had apparently been passed. Helium 79 per cent and oxygen 21 per cent form an atmosphere under which animal life may exist normally.

The high specific gravity, 1·38 (air), of argon gas, probably accounts for its behaviour as an oxygen diluting agent. Experiments must be carried further before a scientific conclusion can be reached.

The preparation of synthetic atmosphere has practical applications in the field of aviation. Tubes of compressed oxygen and helium may some day furnish the respiration gases for high flying.

The study of the physiological effects of the air gases has only begun. The experiments will be carried further before an attempt is made to interpret the data thus far gathered.

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Spectra of Intermetallic Compounds.

DURING the last few years it has been established, on the basis of spectroscopic and other evidence, that certain metals, for example, the alkali metals and mercury, are capable of forming di- or poly-atomic molecules in the vapour state. It is also known that the vapours of certain pairs of metals (for example, sodium-potassium, rubidium-cæsium, and their analogues, also magnesium + alkali, and mercury + alkali) contain molecules of volatile intermetallic compounds. Both types of molecule are most conveniently studied by their absorption spectra, and most of them have been discovered in this way.

The great sensitivity of the spectroscopic method renders it necessary, however, to proceed with caution, as band spectra due to unexpected impurities frequently make their appearance, and are often difficult to identify. Errors of this nature would appear to have entered into recent work on the band spectra of zinc, cadmium, and mercury (Mohler and Moore, *Jour. Opt. Soc. Amer.*, vol. 15, p. 74; 1927), and also into an investigation of mercury-thallium and indium-cadmium mixtures (Waring, NATURE, vol. 121, p. 675; 1928; and *Phys. Rev.*, vol. 32, p. 435; 1928), as the same spectrum has been assigned two different origins —neither of them the true one—by the two different investigators. The greater part of the 'mercury-thallium' spectrum described in the latter papers is identical with one listed (though with some reserve) in the former under the heading of the 'cadmium' molecular spectrum. The true origin of this particular band system would seem to be the molecule of thallium chloride, as it is magnificently developed in very dilute vapour of that salt, under conditions precluding the presence of free metal. Similarly, the 'indium-cadmium' spectrum of Waring would seem to coincide with another set of 'cadmium' bands found by Mohler and Moore. The wave-length agreement is