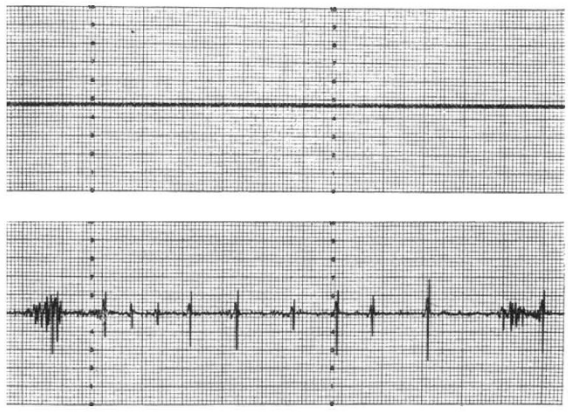

Fig. 1. Lower trace. Spontaneous potentials from an explant of 11-day chick telencephalon 26 hr. after explantation. Vertical lines, $\frac{1}{3}$ sec. apart. Amplitude scale, distance between two horizontal lines equals $1\frac{1}{2}$ μV. The photograph embraces one of the groups of potentials described in the text. Potentials at right-hand side of trace occurred before those at left-hand side. Upper trace. Control of dead cerebellar tissue under identical conditions with identical time and amplitude scales

after 72 hr. in culture. No record of spontaneous potentials from foci in the telencephalon in tissue culture has been found in the literature. Further investigations on these potentials are now in progress.

This work was done under a U.S. Navy Contract, *NONR* 1598 (04).

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RADIOBIOLOGY

Increase of Aldolase Activity in Blood Serum following Irradiation

Sahasrabudhe, Nerurkar and Baxi[1] have found that 2 hr. after whole-body irradiation with 600 r., the aldolase activity of rat liver and scelet muscle decreased by 25–30 per cent.

Experiments were conducted to investigate whether this decrease of aldolase activity in liver and muscle makes any difference to the aldolase activity of blood serum.

As decrease of aldolase activity in the liver and muscle may influence aldolase activity in serum only after some time has elapsed and, as Albaum[2] described, decrease of aldolase activity in rabbit serum 6 hr. after whole-body irradiation with 750 r., the aldolase activity in the serum of guinea pigs was determined 2, 4, and 6 hr. after irradiation with 500 r. (Siemens Stabilivolt apparatus, 180 kV., 10 m.amp., 0·5 copper, 50 cm. distance without a tube, 36·3 r./min. dose-rate). The determinations were undertaken only in serum—in some cases in plasma—samples without any visible sign of hæmolysis by the method of Tovarnicky and Voluyskaya[3] modified by Ananyev and Obouchova[4] using a Unicam *SP.* 500 spectrophotometer. Blood was withdrawn from the heart to avoid any admixture of tissue fluids.

The aldolase activity in the serum of 29 healthy guinea pigs was found to be 34·1 units (ranging from 22·7 to 45·0). In the plasma of 20 healthy animals it was found to be 33·1 units (ranging from 23·7 to 45·1).

The aldolase activity of serum samples 2, 4 and 6 hr. after irradiation was determined in the serum fo 44, 21 and 22 animals. It was stated that the activity reached its maximum 4 hr. after irradiation (Table 1).

Table 1. Serum Aldolase Activity in Healthy and Irradiated Animals

Healthy animals	After irradiation of 2 hr.	4 hr.	6 hr.
34·1 (22·7–45·0)	34·9 (23·1–52·8)	64·4 (41·9–109·3)	53·3 (41·0–72·3)

These results show that aldolase released from liver, and perhaps muscle cells damaged by irradiation appears in serum 1–2 hr. later, that is, 3–6 hr. after irradiation. Thus the determination of aldolase activity in serum may help to detect radiation damage.

Our preliminary investigations on persons suffering from malignant tumour diseases and receiving therapeutic whole-body irradiation gave similar results with the remarkable difference, however, that while in guinea pig the same aldolase activity was found both in whole blood and in plasma, in man the aldolase activity in whole blood was several times greater than in plasma.

Results of investigations to elucidate the cause of this difference and to establish the connexion between dose of irradiation and increase of aldolase activity in serum will be published later.

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Effect on Biological Nitrogen Fixation of Nitrogen Gas treated with Ultra-violet Radiation

Many different theories on nitrogen fixation by *Azotobacter* cells have been presented, among them the proposition of Wilson and Burris[1] that the nitrogen molecules, which are absorbed and take part in the reactions leading to nitrogen fixation, are in an activated state. These authors also suggest that this activated form might comprise a molecule possessing an energy greater than some unknown critical value.

If this suggestion is valid, it might be possible to increase the degree of nitrogen fixation by increasing artificially the energy of the nitrogen gas.

We are recording here some experiments based on this assumption, using ultra-violet light as a means of bringing about an increase in the energy of the nitrogen gas.

The organism used was *Azotobacter vinelandii*, strain *O*. The bacteria were grown in a nitrogen-free medium[2], modified to contain 30 gm. of glucose instead of 10 gm. of sucrose. 0·05–0·2 l./min. of air was passed into the cultures through sintered glass cylinders 20 mm. long and 10 mm. thick (maximal pore diameter 40–60μ). The rate of oxygen transfer for all the cultures was 150 mM O_2/l./hr., as measured by the sulphite method[3]. Separately, 0·4 l./min. of nitrogen was passed into the cultures through a