Station of the University of Illinois and the State Geological Survey—have agreed to lend their combined support to the Regional Conference of the American Institute of Mining and Metallurgical Engineers which meets in St. Louis on October 1 and 2. The St. Louis meeting will stress problems of the mineral industries of the Mississippi Valley area, with particular reference to war needs, and the purpose of the Illinois conference, as originally planned, will be adequately met.

THE Biological Laboratory at Cold Spring Harbor, N. Y., recently acquired, as the gift of Mrs. Henry W. de Forest, two tracts of land of about fifteen acres adjacent to the laboratory property. One tract contains a building suitable for living quarters; the other includes the long stretch of beach known locally as the "Sand Spit," which has been used extensively as a collecting ground.

THE Faculty of Medical Science (pre-clinical studies), King's College, London, will return to London in September. The faculties of arts, natural science, engineering and theology will remain in Bristol.

ACCORDING to *Nature,* the following telegram was received by the Linnean Society of London from the Moscow Naturalists' Society on July 11: "Linnean Society, London. Council of Moscow Naturalists of which Charles Darwin was honorary member has been instructed by its members assembled at meeting in commemoration of centenary of appearance of his Origin of Species to convey their ardent greetings to Linnean Society. In midst this great ordeal which has fallen to lot of democratic countries and of science Moscow Naturalists' Society oldest scientific society in Soviet Union pays reverent tribute to memory great scientist and humanist and firmly believes in early victory of our countries over Hitler tyranny." Academician Alexander Fersman, Professor Serge Ogneff, Professor Vera Varsanofieva (vice-presidents), Professor Serge Lipshitz (Secretary). The following telegram was sent by the Linnean Society of London in reply on July 16: "Moscow Naturalists' Society, Moscow. The Linnean Society of London heartily reciprocates your friendly greetings and joins in tribute to memory of Charles Darwin most illustrious member on our roll. The magnificent resistance of the Russian people to Nazi aggression has aroused deepest admiration in our country. We share your confidence in early victory of the United Nations and are with you to the end." E. S. Russell (President).

THE report of the council of the Ray Society states, according to *Nature,* that, with the consent of the members, the annual general meeting has again not been held, and the present officers and council will continue to act for the current year. The accounts show that the reduction in the amount received from subscriptions has again been less than was anticipated and the sales of the society's publications have been well maintained. A volume on "The Larvae of Decapod Crustacea," by Dr. Robert Gurney, will shortly be issued to subscribers for 1941. A work on the British Mysidae (Opossum shrimps) by Professor W. M. Tattersall is in preparation and is intended to form the issue for 1942. Owing to shortage of materials, the publications will, for the present, be issued in paper covers, but it is hoped later to supply covers for binding uniform with the volumes already published. The council reminds members that, under present conditions, considerable delay in the publication of the annual volumes can not be avoided. It is mentioned that at least one author has lost, by enemy action, all the notes and manuscripts prepared for a work to be offered to the society.

# DISCUSSION

## THE BLOOD PRESSURE IN THE UMBILICAL VEIN OF THE FOETAL SHEEP

ALL those interested in the subject must have admired the demonstration which has been given by Whitehead[1] of the divergent courses taken by the streams of venous blood entering the foetal heart. There is one point, however, in Whitehead's paper which demands a word of comment, *i.e.,* his suggestion that a high venous pressure is a necessary condition.

It may be helpful to state the venous pressures which have been actually registered in the umbilical vein by us in a research which was interrupted by the onset of war:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Foetal age in days ... | 56 | 71 | 89 | 111 | 113 | 118 | 120 | 138 | 141 |
| Pressure in umbilical vein mm Hg. ..... | 13 | 15 | 11 | 10 | 6 | 11 | 8 | 17 | 10 |

These values are much lower than those in the pioneer work of Cohnstein and Luntz[2] obtained by methods which involve great interference with umbilical vessels. Our methods involved no more than insertion of a fine hypodermic needle and no constriction of the vessels.

The above figures do not represent the last word, as there is considerable variation among them, the reason for which is the subject of investigation. The immediate point is, however, that none of the figures is above 18 mm Hg. or below 6.

[1] *Anat. Rec.,* 82: 277.

[2] *Pfluger's Archiv.,* 34: 173.

The cine-x-ray photos of Barclay, Franklin and Pritchard[3] suggest that in the sheep only a small fraction of the blood from the umbilical vein reaches the heart through the ductus venosus; the greater part goes through the liver reducing the pressure in the thoracic inferior vena cava to a still lower level.

Indeed the degree of openness of the sphincter of the ductus venosus[4] may be one factor which effects the pressure in the umbilical vein. However, the readings of the pressure have this property: that, in cases of approximately equal age, the lower venosus pressure is always accompanied by the higher pressure in the umbilical artery, which suggests that the explanation of the variation in pressure lies either in the degree of resistance presented by the placental vessels or the distance of the point at which the pressure is measured from the foetus.

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## FUSION OF TOP SOIL BY AN ELECTRIC ARC

AN interesting and spectacular event took place during a violent thunderstorm on May 30. The point of location of this event is 4 miles east of Wooster, Ohio, in Green Township, Wayne County, Section 32, along the highway on the farm of S. S. Woods. A stroke of lightning sheared off the field wire at the insulator on a pole supporting a 3-phase, 60-cycle transmission line carrying 22,000 volts. The wire and insulator were blistered by the heat. The bare wire, a No. 2, about 5 sixteenths of an inch in diameter, approximately the diameter of a lead pencil, and supported by poles 150 feet apart, was severed at one end and dropped into a field. For a distance of 45 feet, where the wire touched the ground, the current produced a series of electric arcs. Where these arcs occurred, tremendously high temperatures were produced, such as those in an electric furnace. The loud, somewhat musical sound of variable intensity, characteristic of the electric arc, could be heard at a distance of an eighth of a mile. The brilliant, bluish white light and flames, increasing and decreasing in intensity, produced a weird effect.

The downpour of rain was accompanied by heavy flashes of lightning which produced additional voltage and increased the surges of current along the wire. The wire was severed at 12.18 P.M. and the location of the break was not discovered until 3 P.M. During this interval, nearly 2 and ¾ hours, at the point of the arc, the soil was fused into molten material. These masses of molten rock or slag were lying parallel with the wire. They cooled into round, elongate masses, having the shape of the trunk of a tree with branches extending from the main mass. The branches extended into the ground for a distance of not more than a foot. At the point of the greatest arc, the ground is baked for a distance of not more than a foot from the location of the wire. From this area, a mass of fused material, 18 inches long and 4 inches in diameter, with 4 branches more than an inch in diameter, was removed.

It is obvious that the material was in a molten condition, for it is glassy in character and thoroughly vesicular like volcanic scoria or pumice, due to the expansion of enclosed gases, mostly steam. The soil in this locality is glacial in origin, containing clay, sand, humus and occasional rocks. The ground was wet and the soil with its carbon is a good conductor. The high temperature, driving off the water and baking the soil, as well as burning out the carbon, making the ground a poor conductor, would cause the arc to extend parallel with the wire to points beyond, where the ground was wet, producing by this process an elongate structure. The forking of the arc produced the branches extending from the main mass.

There are instances where lightning has struck beach sands and produced round, rod-shaped, fused masses extending into the ground. All the specimens seen by the writer are of small diameter. It may be that the observations described here will help in the interpretation of the structures produced by lightning.

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## MODERN FACSIMILE REPRODUCTIONS OF RARE TECHNICAL PUBLICATIONS

NOT infrequently basic technical publications, especially those of the older authors, are unavailable in modern libraries, and it becomes increasingly difficult to secure copies of them. Sometimes the reason is the original small edition, sometimes because the reserve stock was destroyed by accident or otherwise, and sometimes because of the very great demand for what was considered to be an adequate edition at the time the publication was issued. In any case, these rare items are always high-priced. Many of them are rarely or never quoted in catalogues of out-of-print books, yet the actual demand for them is usually insufficient to warrant one in undertaking the expense of issuing facsimile editions.

The case of Rafinesque's very numerous publications is an interesting one, and copies of his original papers are almost never offered by dealers. He was particularly productive in the decade preceding his death in Philadelphia in September, 1840, yet it is now impossible to acquire copies of the majority of

[3] *Brit. Jour. Rad.*, 15: 69.
[4] *Anat. Rec.*, 82: 398.