versity of Minnesota Medical School, for thyroxine determinations in tissues; $157 to Dr. J. O. Pinkston, American University of Beirut Medical School, for studies on the pharmacological relationship between the sympathomimetic drugs and the chemical mediators of the sympathetic nervous system; $200 to Dr. Alfred C. Lane, Cambridge, Mass., for analyses of radioactive minerals; $150 to Dr. Alfred Romer, Harvard University, for aid in rewriting Williston's "Osteology of the Reptiles." The next meeting of the trustees will be held in April. Applications for grants should be made to the secretary, Dr. Jeffries Wyman, Jr., Biological Laboratories, Harvard University, Cambridge, Mass.

Nature states that the Ministry of Labor has announced that technical committees associated with University Recruiting Boards have been set up to deal with offers of service from men less than twenty-five years of age with qualifications in engineering, chemistry, metallurgy, physics, the biological sciences and mathematics, in order that they may be allocated to an appropriate form of national service. The committees will sit in all cities with universities or university colleges in Great Britain and Northern Ireland, and applications, which should be made in the first instance to a local office of the Ministry of Labor, will be referred to the technical committees and the University Recruiting Boards. This offer is open to men who are starting on their final year of a degree course, or already hold a university degree in any of the following subjects: engineering, chemistry, metallurgy, physics, the biological sciences (including agriculture) and mathematics (including statistics); and to men who are starting on their final year of study or already hold a Higher National Diploma or Higher National Certificate in mechanical or electrical engineering, or the associateship of the Institute of Chemistry.

IT is reported from Bucharest by the *Journal* of the American Medical Association that the government some time ago empowered the Ministry of Health to appoint technical committees to study public health problems and to make proposals regarding most urgent matters needing attention. In all, nineteen committees have been appointed to study typhus fever, malaria, eugenics, maternity and child welfare, insurance against tuberculosis, cancer, venereal diseases, rheumatism, malnutrition and deficiency diseases and dentistry with especial attention to the function of dental technicians. Committees are also being appointed to stimulate the campaign against alcoholism and trachoma, to promote the standardization of biologic products and to investigate means of fostering international relations in health matters.

IT is reported in *Nature* that the British Film Institute, London, one of the objects of which is to collect and disseminate information concerning the use of films for educational purposes, is engaged in compiling a bibliography on the scientific uses of cinematography. Very few books have been written on the subject, and the list will consist almost entirely of references to reports of scientific associations and to articles which have appeared in scientific and film journals. The institute would be glad to receive any information bearing on the undertaking.

DISCUSSION

ORIGINAL SOURCES IN VERTEBRATE EMBRYOLOGY AND ANIMAL CYTOLOGY

THE volume of current literature in the biological sciences has long been a matter of concern to investigators, teachers and librarians. For many years students have asked questions concerning the original sources of literature in vertebrate embryology and animal cytology, particularly in respect to the number of articles published and the journals containing these, which I, for one, could answer only in the most general way. The establishment of *Biological Abstracts* in 1927 was a most welcome event, and with the completion of its tenth volume, an opportunity to obtain statistical material presented itself. With the assistance of two undergraduate tabulators provided through NYA funds I have prepared the accompanying tables of the abstracts printed under the rubrics "Vertebrate Embryology" and "Cytology, Animal." These do not, of course, include all abstracts containing embryological data, for example, for those printed under other rubrics and referred to by cross-reference were not tabulated.

An examination of Table 1 shows that during the years 1927–1936 abstracts of 3,469 titles in vertebrate embryology appeared, an average of 347 titles annually. This output of embryological research may

TABLE 1

SOURCES AND NUMBERS OF ABSTRACTS CONCERNING VERTEBRATE EMBRYOLOGY FOUND IN "BIOLOGICAL ABSTRACTS," 1927–1936

Sources	594
Number of abstracts	3,469
Ten journals most frequently abstracted:	
Zeitschrift für wissenschaftliche Biologie (Berlin)	190
Anatomical Record (Baltimore)	144
Journal of Experimental Zoology (Baltimore)	138
Anatomische Anzeiger (Jena)	122
Journal of Anatomy (London)	111
Zeitschrift für die gesamte Anatomie (Munich)	101
Comptes rendus de séances, Société de Biologie (Paris)	99
Jahrbuch für Morphologie und mikroscopische Anatomie (Leipzig)	90
American Journal of Anatomy (Baltimore)	76
Archiv für experimentelle Zellforschung (Jena)	75
Subtotal	1,146
Per cent. of total	33

best be appreciated when it is remembered that Minot's well-known "Bibliography of Vertebrate Embryology," covering the literature up to 1892, contains only 3,555 references.

The abstracts summarized in Table 1 came from 594 sources, illustrating the difficulties of covering the literature encountered by the section editors concerned. We have listed in order the ten journals most frequently abstracted during this period, and it is of interest to note that these ten provided about one third of the total number of abstracts.

A similar table (2) contains the summaries of our

TABLE 2

SOURCES AND NUMBERS OF ABSTRACTS CONCERNING ANIMAL CYTOLOGY FOUND IN "BIOLOGICAL ABSTRACTS" 1927–1936

Sources	251
Number of abstracts	1,518
Ten journals most frequently abstracted:	
Journal of Morphology and Physiology (Baltimore)	84
Zeitschrift für wissenschaftliche Biologie (Berlin)	76
Comptes rendus de séances, Société de Biologie (Paris)	62
Anatomical Record (Baltimore)	55
Biological Bulletin (Woods Hole, Mass.)	53
Quarterly Journal of Microscopical Science (London)	45
Cytologia (Tokyo)	38
Protoplasma (Leipzig)	37
Archiv für experimentelle Zellforschung (Jena)	31
SCIENCE (New York)	31
Subtotal	512
Per cent. of total	34

tabulation of cytological literature, which is roughly about half as large; 251 sources were abstracted with a total of 1,518 abstracts, an average of 152 per annum. The ten journals listed were the source of approximately one third of the abstracts. It should be noted that the relative position of *Cytologia* and *Protoplasma* in the list of journals is due to the fact that they were founded during the period under consideration. For purpose of comparison the bibliography of E. B. Wilson's "The Cell in Development and Heredity" (1925 edition) was selected. This contains approximately 3,000 titles.

The original list of sources from which abstracts of embryological articles had been prepared was checked against the Union List of Serials in Libraries of the United States and Canada. We were able to verify the correct title of 410 serials. A professional bibliographer might well have tracked down some additional titles, but many of our first list were of books and irregular publications not listed as serials. In Table 3 we present the distribution of these serials according to the language (or principal language) employed. While English appears to be the most widely used language in current embryological literature, the student who knows English only finds himself blocked from direct access to almost two thirds of the original sources. After German and French, in the order named, Italian seems to be the language most frequently employed.

TABLE 3

DISTRIBUTION BY LANGUAGES OF SERIALS CONTAINING ARTICLES ON VERTEBRATE EMBRYOLOGY ABSTRACTED IN "BIOLOGICAL ABSTRACTS" 1927–1936

Language of serial	Serials abstracted	Number of abstracts
English	131	1,217
German	85	958
French	70	422
Italian	42	244
Japanese[1]	26	108
Spanish	16	25
Russian[1]	10	25
All others	30	90
Total	**410**	**3,089**

[1] Usually with summaries in English, German or French.

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DIPLODIA STEM-END ROT OF LEMONS CONTROLLED WITH SODIUM ETHYL MERCURI THIOSALICYLATE

THAT the utilization of modern developments in the field of medical therapeutics may perhaps be worthy of more extensive trial in the field of plant pathology is indicated by recent experimental work on citrus fruit stem-end rot control. The efficiency of merthiolate (Lilly) or sodium ethyl mercuri thiosalicylate as a control for fungi affecting the animal body has suggested it for use against plant pathogens. In several successive tests during the fall of 1939, this antiseptic in the regular 1 to 1,000 tincture form, applied as a local stem-end treatment on lemons, has given practically perfect stem-end rot control after two-weeks incubation, during which controls rotted to the extent of 60 to 72 per cent. In one test, after three-weeks incubation, there was no loss in the treated fruits, while decay increased to 84 per cent. in the controls. Later tests showed that 1 to 5,000 dilutions were practically as efficient as the 1 to 1,000. Sulfo-merthiolate (Lilly) or sodium *p*-ethyl mercuri thiophenylsulfonate has likewise given almost complete control by the same method.

The stem-end treatments were applied by a "stamp pad" method, improvised during the tests, whereby a piece of heavy felt in a non-corrosive holder was kept moistened with the antiseptic solution. The individual fruits were presented with their stem ends against the felt, with a slight twisting motion (through about 60 degrees). This resulted in complete wetting of the "button" and the adjacent rind. The control recorded was undoubtedly due to both the high disinfectant properties of the chemicals and their excellent penetrating powers. Complete fruit-dip treatments for two minutes in 1 to 10,000 dilutions of both merthiolate and sulfomerthiolate gave 99 to 100 per cent. control in late season tests while controls were showing 27 and 35 per cent. decayed after a three-week incubation period.

While these promising chemicals appear to be rather expensive, records have shown that during a