double fertilized sea-urchin eggs established the probability that human and other animal cancer is essentially a distortion of the numerical relations of the chromosomes in the cells. But, so far as I have been able to learn by extensive inquiry extending over fifteen years, no American physician knows of these most fundamental studies ever made upon cancer. A realization of the nature of the disease seems a natural prerequisite to the most worthy study of its causes and cure.

To be sure, few physicians are trained cytologists, but there must be some who are sufficiently trained to read Boveri's papers with understanding. Probably also no American physician has the cytological skill to continue Boveri's studies, but if the directors of cancer research were informed as to the foundation Boveri has laid for an understanding of this disease they might be able to secure aid from cytologists competent for this work, though this would by no means be easy. The technique in this most intimate field is forbiddingly difficult. But, however difficult further research may be, there is no adequate excuse for ignorance of this the most illuminating work ever done upon cancer. No one can study the subject intelligently unless fully cognizant of Boveri's studies.

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A PERIDERMIUM NEW TO THE NORTHEASTERN UNITED STATES

DURING the first week of June, 1925, the writer discovered a gall-forming Peridermium on *Pinus sylvestris,* Scotch pine, bordering Round Lake near Woodgate, New York.

The Scotch pine is in plantations which were established by a Mr. R. Dallarmi, a Bavarian, who acquired the land in 1856. He cleared most of the ground, which had been lumbered and devastated by fire for the growing of farm crops. The topography of the land is gently rolling and the soil is a very light sandy loam. Some of the ridges and knolls are almost pure sand, and when they became too poor for farming they were reforested by the broadcasting of seed of *Pinus sylvestris, Pinus strobus* and *Picea excelsa. Pinus sylvestris,* with one or two exceptions, predominates. It is the only species present in some of the plantations.

Mr. Dallarmi imported the seed from Germany. Small plantings of seedlings of *Pinus sylvestris, P. Austriaca, P. strobus,* and *Picea excelsa* which he grew from seed were made around the home grounds and a small cemetery in 1870. Plantations were established by sowings of seed in '74, '79, '80 and '83. He kept careful records of all the crops and there seems to be no mention of any seedling forest trees other than the ones which he grew from seeds being planted on his estate. A daughter, Miss Mary W. Dallarmi, and former neighbors who knew Mr. Dallarmi for many years prior to his death in 1913, claim that no trees from any outside source were brought to his farm. The source of the infection at Woodgate is as yet entirely unknown.

In June and August of 1925, the writer made careful searches for alternate hosts of the Peridermium, but none were found. Very thorough scoutings have been made the present season by various workers for such plants. To date, October 4, 1926, no uredinial and telial stages have been discovered. This Peridermium is undoubtedly autoecious at Woodgate, N. Y.

The galls of this Peridermium are quite similar in shape to those of *Cronartium cerebrum* (Peck) Hedgc. and Long. But the aecia of the Woodgate peridermium are not cerebroid. Furthermore, there are no oaks, the alternate hosts of *C. cerebrum,* within ten miles of Woodgate. There is a striking resemblance between the galls of the Peridermium occurring at Woodgate and the illustrations of *Peridermium giganteum* (Mayr) Tub. which occurs on *Pinus densiflora* in Japan, but this rust is apparently heteroecious.

It is not known whether the Woodgate Peridermium will attack other hard pines. With the exception of probably a dozen *Pinus austriaca* and a few hundred *Pinus resinosa* which have been planted in recent years, there are no other hard pines in the Woodgate region. As yet the *Pinus austriaca* and *P. resinosa* do not seem to be attacked by the Peridermium. There are about fifteen acres reforested on the Dallarmi estate, which is now owned by the Masonic Lodge of New York. Natural seeding of *Pinus sylvestris* has resulted quite freely, the trees ranging from one to twenty or more years of age. The Peridermium is distributed throughout the planted and natural seeded areas. It is also known to have spread into plantations of *Pinus sylvestris,* one hundred and ten miles distant from the Round Lake infection.

The Conservation Commission and the Office of Forest Pathology in the U. S. Department of Agriculture are cooperating on an intensive study of the Peridermium at Woodgate. Some of the results of this work to date are: This Peridermium has been at Woodgate for at least thirty years. The amount of infection has increased rather rapidly since 1920. Infection apparently takes place on the current season's wood and through the epidermis of the twigs and stems. Infections may occur on the axis where the staminate cones are borne. In 1926 the aecia began to appear about the middle of May. The climax of aecia production occurred the first week in June. Viable spores were found in a canker August 21, 1926. In the majority of cases the cankers bear their

first aecia the third season following infection. Some galls fruit when only two years old.

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A NEW BIBLIOGRAPHY OF SCIENTIFIC JOURNALS

A LARGE number of the principal libraries in the United States and Canada are now cooperating in the compilation of a check list of periodical literature which will be of great value to all workers in science. It will not be limited to scientific literature but will include practically all serials of a scientific nature that are held by one or more of the cooperating libraries. No classification is attempted. The list gives the full name of each serial (including academy publications), the places and dates of publication, variations in titles and an exact statement of the holdings of each cooperating library. For such workers as enjoy the privileges of a library which enters into the inter-library loan arrangement, this new list will provide access to practically every journal or society publication which has reached America. Others will be informed of the nearest library at which the desired reference may be consulted.

The new work will be called the Union List of Serials and will be published by the H. W. Wilson Company of New York. The Provisional Edition from A to R is now available in sections and the Final Edition, a volume of about twenty-five hundred pages and seventy-five thousand entries, will be ready late in 1927.

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SCIENTIFIC BOOKS

Brains of Rats and Men. A Survey of the Origin and Biological Significance of the Cerebral Cortex. By C. JUDSON HERRICK. xiii + 382 pp., 53 figs. Univ. of Chicago Press, 1926.

IN the first eight chapters of "Brains of Rats and Men" the author lays the anatomical foundation for his discussion of the learning processes of rats and men which constitutes the latter part of the book.

The practically unlimited potentialities of diversity of cortical association combinations are argued mathematically upon anatomical data (Chapter I), and are regarded "adequate for any theoretic explanation of cerebral functions whatever." The author then shows (Chapter II) how there has been worked out in the cerebral cortex a mechanism of maximum efficiency adequate for the analysis of many afferent systems of different kinds and their regrouping through a wide range of different pathways, a type of organization that is in strong contrast with the mass reflexes of the spinal cord and corpus striatum. The problem of the conditional reflex (Chapter III) is approached through an illustration of the neural mechanism of lower vertebrates, particularly fishes and amphibians, in relation to the behavior pattern. In a similar manner the evolution of the cerebral cortex (Chapter IV) is traced through the ichthysiopsid (fishes and amphibians), sauropsid (reptiles and birds), mammalian and human types, and the genetic, structural and physiological interrelations of the cerebral cortex and the corpus striatum is analyzed for birds and reptiles (Chapter V), and for mammals (Chapter VI). The phylogenetic development of the thalamus is then comparatively treated through the ichthysiopsid, sauropsid and human types, and the phylogenetic age of the thalamus (Chapter VII) is emphasized as a basis for appreciation of its bearing on physiological and psychological problems. In illustration of these relations a series of new diagrams (page 31) is introduced with good effect. In the treatment of the cerebral hemispheres (Chapter VIII) the marsupial brain as described morphologically by Obenchain, histologically by Gray and physiologically by Gray and Turner, is given large place, and somewhat similar studies of the brain of the rat by Furtuyn, Craigie, Sugita and Lashley are taken as the immediate approach to the discussion which comprises the latter part of the book.

In an effort to arrive at a true interpretation of "how rats learn" (Chapter IX) the author discusses, upon the basis chiefly of Lashley's work, the questions of strictly subcortical processes, special structures for facilitation of learning, short-circuiting of habit formation processes from cortical to subcortical mechanisms, disturbance of learned processes by cortical injury, interrelation of the amount of cortex functioning and the rate of learning, localization of cortical functions, equipotentiality, the relation of cortex to corpus striatum in the habit-learning process, and the unique rôle of the frontal cortex. Certain phases of this discussion are elaborated in detail (Chapters X to XIII), under the topics "Mechanisms of Learning in the Rat," "Localization of Learned Processes in the Cerebral Cortex of the Rat," "The Frontal Lobes" and "Association Centers." These topics are then reviewed (Chapter XIV) as a "Summary of Cortical Evolution." In his treatment of the "Subconscious" (Chapter XV) the author presents the cerebral cortex as an organ of creative automaticity that has designed and fabricated itself during its ontogenetic and phylogenetic development, and the working of which is intelligence. He insists that appeal to the "metaphysical, theological, mythologi-