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IN MEMORY OF ALEXANDER PAVLOVICH AVTSYN

© Alexander N. Zubritsky

European Society of Pathology, Moscow, Russian Federation

Contact information: Alexander N. Zubritsky — Professor. E-mail: zubr.alex2012@yandex.ru
ORCID: https://orcid.org/0009-0000-6984-2343 SPIN: 6242-8839

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Abstract. The article is devoted to the life and professional activities of the outstanding Soviet scientist-pathologist, academician of the USSR Academy of Medical Sciences, laureate of the State Prize, prizes named after I.V. Davydovsky, I.I. Mechnikov and the Moscow Society of Nature Testers, Doctor of Medical Sciences, Professor Alexander Pavlovich Avtsyn (13.09.1908–20.04.1993), born in Moscow into the family of an engineer and inventor. The working life of Alexander Pavlovich began at the age of 15, working in children's neuropsychiatric hospitals, while simultaneously studying at a Moscow secondary school, from which he graduated in 1925 As a 3rd year student and continuing to work in pathoanatomical laboratories, he became interested in scientific activities and in 1933, after successfully graduating from the 1st Moscow Medical Institute named after I.M. Sechenov, he got a job at the Institute of Neuropsychiatric Prevention of the People's Commissariat of Health of the RSFSR as a researcher under the guidance of Prof. P.E. Snesarev, where began studying the histopathology of the nervous system. In 1936, he defended his PhD dissertation, and in 1954, based on the collected material during the Great Patriotic War, defended his doctoral dissertation on the topic "Pathological anatomy of typhus". His scientific interests were issues of military and geographical pathology, pathological anatomy of infectious diseases, and cytopathology. He was distinguished by such traits as intelligence, charm, wit, the highest professionalism, a brilliant lecturer, and a polemicist. From 1961 to 1988, Alexander Pavlovich was the founder and first director of the Institute of Human Morphology, in whose post he founded and developed such scientific directions as geographical pathology and cytopharmacology, and from 1988 to 1993, he was an honorary adviser to the director of this institute. A.P. Avtsyn wrote more than 250 scientific papers, including monographs and chapters in manuals. A.P. Avtsyn died at the 85th year of his life from acute coronary insufficiency. He was buried at the Vagankovsky cemetery in Moscow. This and everything else is described in the presented article.

Keywords: Alexander Pavlovich Avtsyn, scientist-pathologist

ПАМЯТИ АЛЕКСАНДРА ПАВЛОВИЧА АВЦЫНА

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Европейское общество патологии. Москва, Российская Федерация

Контактная информация: Александр Николаевич Зубрицкий — профессор. E-mail: zubr.alex2012@yandex.ru
ORCID: https://orcid.org/0009-0000-6984-2343 SPIN: 6242-8839

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Резюме. Статья посвящена жизни и профессиональной деятельности выдающегося советского ученого-патолога, академика АМН СССР, лауреата Государственной премии, премий имени И.В. Давыдовского, И.И. Мечникова и Московского общества испытателей природы, доктора медицинских наук, профессора Александра Павловича Авцына (13.09.1908–20.04.1993), родившегося в Москве в семье инженера и изобретателя. Трудовая жизнь Александра Павло-

вича началась в 15-летнем возрасте, когда он работал в детских нейропсихиатрических лечебницах и одновременно учился в Московской средней школе, которую окончил в 1925 г. Будучи студентом 3-го курса и продолжая работать в патологоанатомических лабораториях, увлекся научной деятельностью, и в 1933 г. после успешного окончания 1-го Московского медицинского института имени И.М. Сеченова устроился работать в Институт нейропсихиатрической профилактики Наркомздрава РСФСР научным сотрудником под руководством проф. П.Е. Снесарева, где приступил к изучению гистопатологии нервной системы. В 1936 г. защитил кандидатскую диссертацию, а в 1954 г. на материале, собранном во время Великой Отечественной войны, — докторскую диссертацию на тему «Патологическая анатомия сыпного тифа». Его научными интересами были вопросы военной и географической патологии, патологической анатомии инфекционных болезней, цитопатологии. Его отличали такие черты, как интеллигентность, обаятельность, остроумие, высочайший профессионализм, он был блестящим лектором, полемистом. С 1961 по 1988 гг. Александр Павлович основал, а затем был первым директором Института морфологии человека, на посту которого обосновал и развил такие научные направления, как географическая патология и цитофармакология, а с 1988 по 1993 гг. — был почетным советником директора этого института. Перу А.П. Авцына принадлежит более 250 научных работ, в том числе монографий и глав в руководствах. А.П. Авцын скончался на 85-м году жизни от острой коронарной недостаточности. Похоронен на Ваганьковском кладбище г. Москвы. Об этом и обо всем другом повествуется в представленной статье.

Ключевые слова: Александр Павлович Авцын, ученый-патолог

On September 13th, 2023 we have celebrated the 115th anniversary birth, and April 20 — the 30th anniversary of death to the outstanding Soviet scientist-pathologist, pathophysiologist, neurohistologist, cytologist, educator and organizer, academician of the USSR Academy of Medical Sciences, laureate of the State Prize, prizes named after I.V. Davydovsky, I.I. Mechnikov and the Moscow Society of Nature Testers, Doctor of Medical Sciences, Professor Alexander Pavlovich Avtsyn [1] (Fig. 1, 2).

Alexander Pavlovich Avtsyn was born on September 13, 1908 in Moscow in the family of a talented engineer and inventor in the field of telephone business and electric motors Pavel Ivanovich (1919 death) and housewife Maria Alexandrovna (amazingly beautiful woman with kind eyes, 1889–1949) Avtsyn.

Sasha Avtsyn began his working life back in 1923 at the age of 15, giving lessons, working in kindergartens and children's neuropsychiatric hospitals, while simultaneously

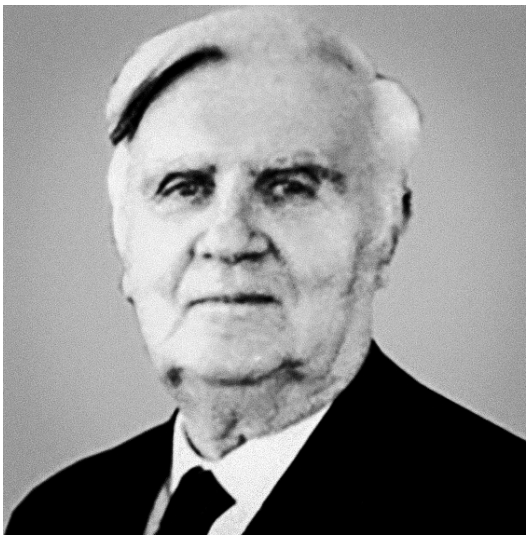

Fig. 1. **Alexander Pavlovich Avtsyn (13.09.1908 — 20.04.1993) (Available at: http://www.morfolhum.ru/about/history/ (accessed 31.10.2023))**

Рис. 1. **Александр Павлович Авцын (13.09.1908 — 20.04.1993) (Доступно по: http://www.morfolhum.ru/about/history/ (дата обращения: 31.10.2023))**

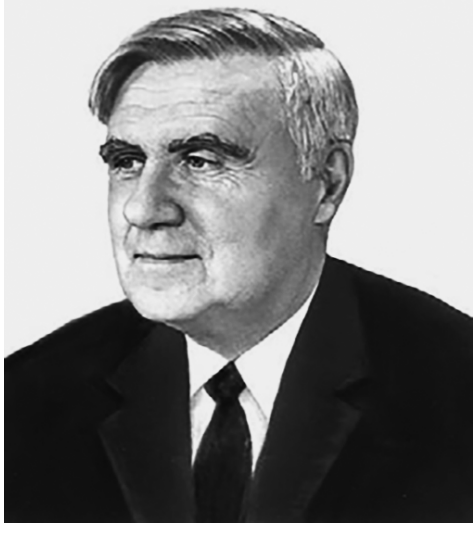

Fig. 2. **Alexander Pavlovich Avtsyn (Available at: https://edu.monikiweb.ru/istoria-v-litsah.php?p=atabekov-david-nersesovich) (accessed 31.10.2023))**

Рис. 2. **Александр Павлович Авцын (Доступно по: https://edu.monikiweb.ru/istoria-v-litsah.php?p=atabekov-david-nersesovich) (дата обращения: 31.10.2023))**

studying at Moscow Secondary School No. 41, from which he graduated in 1925. His non-proletarian origin prevented him from further realizing his dream of becoming a doctor, and only after the personal support of the first People's Commissar of Education of the RSFSR Anatoly Vasilievich Lunacharsky, a stubborn young man in 1929 was still able to enter the medical faculty of Nizhny Novgorod State University. In 1930, student Avtsyn transferred to the Mother See for the 2nd year of the 1st Moscow Medical Institute (1MMI) named after I.M. Sechenov, which he successfully graduated in 1933 [2].

A.P. Avtsyn's scientific interests throughout his bright life were the issues of histopathology of the nervous system, military and geographical pathology, pathological anatomy of infectious diseases, cytopathology and others. He was distinguished by such traits as intelligence, goodwill, charm, wisdom, wit, the highest professionalism with encyclopedic erudition, an excellent storyteller, a brilliant lecturer and polemicist, acute perception of the new and clinical intuition, especially manifested in expeditions. He often liked to repeat a phrase such as "we have nothing original," which in turn can correspond and be recognized as his motto (creed) [3].

A man of science, Alexander Pavlovich, at the same time, never closed himself within the framework of his profession and throughout his life was fond of literature, theater, fine arts, and composing his own poems. Probably, A.P. Avtsyn inherited a craving for travel and expeditions from his father, which he was so clearly able to realize later during his research into human geographic pathology [4].

As a 3rd year student, continuing to work, in particular, as a laboratory assistant in pathoanatomical laboratories (PAL) and being carried away by scientific activities, from 1933 to 1937 he got a job as a researcher at the PAL of the Institute of Neuropsychiatric Prevention of the People's Commissariat of Health of the RSFSR (now the Federal State Budgetary Institution "National Medical Research Center for Psychiatry and Narcology named after V.P. Serbsky" of the Ministry of Health of the Russian Federation) under the leadership of Professor P.E. Snesarev, where he enthusiastically began studying the histopathology of the nervous system, combining this position with external work in Moscow prosecturas under the leadership of Yu.M. Lazovsky and V.A. Klirikova. As a result of this study, in 1936 he gave the first description of mesoglioblastomas arising in children from embryonic microglioblasts and in the same year A.P. Avtsyn defended his dissertation for the degree of Candidate of Medical Sciences, and the observations, looking ahead, collected by him in during the Great Patriotic War (GPW), gave him the opportunity to defend his doctoral dissertation in 1954 on the topic "Pathological anatomy of typhus," which made it possible to create a new concept of this disease [5].

Earlier, in 1939, he proposed an original method for staining myelin fibers in the central nervous system by impregnating histological sections of the brain with phosphorus-molybdenum silver — the Avtsyn method. Long-term research

Fig. 3. In Berlin, near the walls of the Reichstag, the end of the Great Patriotic War. A.P. Avtsyn (left), next to his wife Vera Alexandrovna Rykova. (Available at: https://roim.historymed.ru/science/publications/8098/ (accessed 31.10.2023))

Рис. 3. В Берлине у стен Рейхстага, конец Великой Отечественной войны. А.П. Авцын (слева) рядом с женой Верой Александровной Рыковой. (Доступно по: https://roim.historymed.ru/science/publications/8098/ (дата обращения: 31.10.2023))

on the pathology of typhus and other rickettsioses in collaboration with Prof. M.M. Mayevsky allowed A.P. Avtsyn not only to confirm the classical data of I.V. Davydovsky, but also to develop and supplement them in many ways with new observations of fundamental importance, in particular, his description of protracted forms of typhus, which ended fatally as a result of allergic vascular lesions the brain or the heart, and in 1942 he described a valuable diagnostic sign of typhus – a conjunctival rash called the "Chiari–Avtsyn symptom" and proposed an adrenaline test to identify it, and in 1944 he described peculiar cells in the brain stem, givung rise to special transfascicular fibers — Avtsyn fibers, some of which end near the cerebral vessels [6].

A.P. Avtsyn discovered the formation of a specific capsule in the tissues of experimental animals around a pill of a polycyclic aromatic hydrocarbon, which is a strong carcinogen: dimethylbenzanthracene (DMBA) — the Avtsyn capsule phenomenon. The villous cells in this capsule were named after him. In addition, in 1946, using pathohistological method, he established the angioparalytic effect of Provacek's rickettsia toxin and the elimination of this effect under the influence of specific antibodies. Examining the fine structure of central nerve fibers, Alexander Pavlovich showed that they, like peripheral ones, have Ranvier intercepts or their morphological analogues [7].

After graduating from the institute, A.P. Avtsyn also worked as an assistant, then as an associate professor at the Department of Pathological Anatomy of the I MMI, and in 1934 he began working as an assistant prosector at the Moscow Clinical Institute of Infectious Diseases. From 1937 to 1941, he was an assistant, associate professor at the Department of Pathological Anatomy of the 3rd MMI. From 1942 to 1943 — Acting Associate Professor at the Department of Pathological Anatomy of the I MMI.

During the GPW, A.P. Avtsyn was drafted into the ranks of the Red Army (date of commencement and completion of service: 03.1943 — 09.24.1945). With the rank of military doctor 3rd rank (now major of medical service) as part of the active army of the South-Western, 3rd Ukrainian and 1st Belorussian fronts, he headed the pathoanatomical service of the triage evacuation hospital No. 2613, evacuation hospital No. 3642, then PAL of the central research center clinical hospital of the Soviet Army. By the way, in 1943 A.P. Avtsyn managed to create a family unit by marrying Vera Alexandrovna Rykova, they had no children. The war ended in Berlin, near the walls of the Reichstag (Fig. 3). His wife V.A. Rykova (03.07.1904 — 10.11.1994) was born in Moscow (start and end date of service: 23.03.1943 — 04.07.1946). With the rank of captain of the medical service as part of the 3rd Ukrainian Front, 3rd Guards Army, 1st Belorussian Front, she served in triage evacuation hospital No. 2613, had awards: medals "For the Defense of Moscow", "For the Victory over Germany in the Great Patriotic War" Patriotic War of 1941–1945" [8–10].

During the GPW, A.P. Avtsyn's attention was focused on the study of the pathology of combat trauma. He collected a large pathological material (2500 observations), on the basis of which he developed the pathological anatomy of gunshot osteomyelitis, infectious and alimentary dystrophy of the wounded, anaerobic pleural infection, tetanus, wound sepsis, complications of gunshot wounds. In 1946, his monograph "Essays on military Pathology" was awarded a prize at the state competition of scientific papers summarizing the experience of military medicine during the GPW [11].

In front-line conditions, A.P. Avtsyn for the first time studied the morphological picture of the effect of the first domestic antibiotics together with academician Z.V. Ermolyeva. Using a large material, he showed the positive effect of streptomycin in tuberculous meningitis, expressed in the disappearance of the exudative component with an increase in the productive reaction. In the field of experimental pathology A.P. Avtsyn proposed new methods for modeling dysentery, typhoid, colibacillary, staphylo-, strepto- and pneumococcal, tuberculosis and leishmanial pneumonia in mice in order to study the chemotherapeutic effect of various antibiotics [12].

From 1945 to 1951 A.P. Avtsyn was a senior researcher at the Laboratory of Pathological Anatomy of Childhood Diseases of the Institute of Normal and Pathological Anatomy of the USSR Academy of Medical Sciences under the leadership of the head of this laboratory, Academician of the USSR Academy of Medical Sciences M.A. Skvortsov, who was his true teacher and Alexander Pavlovich considered the happiest years of work under his leadership at this institute.

In 1950, by order of the Minister of Health of the USSR A.P. Avtsyn was transferred to the Research Laboratory at the Mausoleum of V.I. Lenin and from 1951 to 1961 was the head of the morphological department of this laboratory, where he carried out extensive scientific and organizational work to strengthen the morphological department, as well as training young specialists in the field of theory and practice of embalming. He was directly involved in the embalming and preservation of Georgy Dimitrov's body in Sofia. For the successful fulfillment of the responsible task of the Government and for his work in the laboratory at the Lenin Mausoleum, A.P. Avtsyn was awarded the Order of Lenin, and the Government of the People's Republic of Bulgaria awarded him the Order "Red Banner of Labor" [13].

From 1955 to 1961, A.P. Avtsyn was part-time head of the morphological department of PAL with the prosectorium of the Institute of Neurosurgery named after N.N. Burdenko of the USSR Academy of Medical Sciences.

In October 1958, A.P. Avtsyn was sent by the USSR Ministry of Health to Switzerland for a meeting of the WHO expert committee. At this meeting, Alexander Pavlovich for the first time expressed his point of view that regional and geographical patho-

Fig. 4. Examination by A.P.Avtsyn of a patient in the neurological department of the Murmansk Regional Hospital. (Available at: https://roim.historymed.ru/science/publications/8098/ (accessed 31.10.2023))

Рис. 4. Осмотр А.П. Авцыным больного неврологического отделения Мурманской областной больницы. (Доступно по: https://roim.historymed.ru/science/publications/8098/ (дата обращения 31.10.2023))

Fig. 5. A.P. Avtsyn is in a cheerful mood — the meeting of the Scientific Council of the Institute of Human Morphology is going well. (Available at: https://roim.historymed.ru/science/publications/8098/ (accessed 31.10.2023))

Рис. 5. У А.П. Авцына хорошее настроение — заседание Ученого совета Института морфологии человека проходит хорошо. (Доступно по: https://roim.historymed.ru/science/publications/8098/ (дата обращения: 31.10.2023))

logy are two different organizational forms of one science — medical ecology. The scientist also believed that geographical pathology in many ways resembles military pathology. He explained that "severe forms of regional diseases, as a rule, arise in extreme climatogeographical, medical-biological and social conditions. The unfavorable effects of these conditions on a person and his body, on the one hand, cause extreme tension in the adaptation mechanisms, and on the other hand, they conceal the possibility of disadaptation, which can manifest itself in certain forms of weakening of the body, leading to the occurrence of diseases that end in death or premature disability. Therefore, "this is undoubtedly a complex science or even a system of sciences, presenting the greatest opportunities for a multidisciplinary approach."

In 1960, he experimentally proved the effect of hormones on the development of some brain tumors and showed their differences in the content of sexual chromatin, and in 1963 formulated the main provisions of theoretical neurooncology, introduced the concept of preglyoma for the first time and discovered the preproliferative period in certain types of chemical carcinogenesis in the central nervous system.

In the mid-70s, after a cholera outbreak in the south of the country, A.P. Avtsyn studied in depth the cellular mechanisms of cholera intoxication and NAG infection. In particular, he obtained fundamentally new results that made it possible to explain the "rapid intestinal dehydration syndrome", and in 1979 he described the nature of ultrastructural changes in organs under a number of pathogenic influences.

From 1961 to 1988, A.P. Avtsyn was the founder and first director of the Scientific Research Institute of Human Morphology (SRIHM) of the USSR Academy of Medical Sciences in Moscow. In this position, Alexander Pavlovich theoretically justified and developed scientific directions in our country — geographical pathology and cytopharmacology, which he paid great attention to not only within the walls of his institute. Under his leadership and with his personal participation, numerous and long-term expeditionary studies were carried out in the regions of the Far and Near North, the Baikal-Amur Mainline zone, arid zones and highlands, both in our country (Fig. 4) and beyond its borders, in particular the Equatorial Africa. The results of these studies were presented in the form of recommendations aimed at improving disease prevention in the geographic areas studied. He was the first to describe such forms of regional pathology as Kola encephalitis, Magadan pneumopathy, and identified the northern variant of hypertension. That is why A.P. Avtsyn should rightfully be considered one of the recognized leaders of the large school of domestic geographical pathologists, covering many specialties. It should be noted that the SRIHM was organized on the basis of order of the USSR Ministry of Health No. 495 dated November 28, 1960 and began its activities in early 1961, initially located on the basis of the pathology department (PD) of a large multidisciplinary clinical institution — Moscow Regional Research Institute named after M.F. Vladimirsky, where from 1961 to 1973

A.P. Avtsyn headed the PD, which at that time was located in the 13th building of this institute, and at the same time was the director SRIHM. In 1973, SRIHM started its activities in its own building at a new location on Tsyurupy Street [14].

From 1968 to 1969, after the death of I.V. Davydovsky, the Department of Pathological Anatomy of the 2nd MMI named after N.I. Pirogov was headed by Academician of the USSR Academy of Medical Sciences A.P. Avtsyn. From 1988 to 1993, A.P. Avtsyn was an honorary adviser to the director of the SRIHM of the USSR Academy of Medical Sciences (now the Research Institute of Human Morphology named after Academician A.P. Avtsyn of the Federal State Budgetary Scientific Institution "Russian Scientific Center for Surgery named after Academician B.V. Petrovsky").

A.P. Avtsyn is the author of more than 250 scientific works, including monographs and chapters in manuals. Such works as "Essays on Military Pathology" (1946), "Pathological Anatomy of Typhus" (1954), "Pathological Anatomy of Diseases Caused by Rickettsias" (1964), "Introduction to Geographical Pathology" (1972) and the first modern domestic manual on cell pathology "Ultrastructural Foundations of Cell Pathology" (1978), written by A.P. Avtsyn together with Prof. V.A. Shakhlamov, in which his concepts of pathogenic information, its reception by the cell, the stages of this process and its significance for the initiation of any disease were further developed.

A.P. Avtsyn was one of the WHO experts to create a new classification of the brain oncological diseases, took an active part in the USSR Academy of Sciences commission on applied human physiology, in the Presidium of the USSR Academy of Sciences Scientific Council on microelements, was a member of the Presidium of the All-Union and the Board of the Moscow Society of Pathologists, editorial board of the journals "Arkhiv Pat ologii", "Bulletin of the USSR Academy of Medical Sciences", "Human Physiology", Soviet Committee on the UNESCO Problem "Man and the Biosphere", organizer and honorary chairman of the Moscow Scientific Society of Cytologists, chairman of the Scientific Council of Union significance "Human Morphology", author and editor of the editorial departments "Pathology and Morphology", "Psychiatry" and "Pathological Anatomy" of the 2nd and 3rd editions of the Great Medical Encyclopedia, Small and Brief Medical Encyclopedias, and also headed the Scientific Council on Human Morphology of the USSR Academy of Medical Sciences for over 10 years (Fig. 5). Over 80 PhD and doctoral dissertations have been completed under his supervision.

A.P. Avtsyn's achievements and his great contribution to science were highly appreciated by the state. In 1961, he was elected a corresponding member, and in 1965, an academician of the USSR Academy of Medical Sciences. In 1982 — laureate of the USSR State Prize for a series of works in the field of geographical pathology and epidemiology of cardiovascular, oncological and nervous diseases, in 1985 — laureate of the I.V. Davydovsky Prize for the collective monograph "Human Pathology in the North", in 1990 — laureate of the I.I. Mechnikov Prize for a series of works "Pathology of Infectious Diseases", and was also awarded two Orders of Lenin, two Orders of the Red Banner of Labor, the Order of the Patriotic War, II degree, and many military and labor medals [15].

In recent years, A.P. Avtsyn has paid much attention to the medical microelementology, the allocation of which is a logical continuation of the classical studies of academician V.I. Vernadsky. The accumulated original material with world literature data on this issue was systematized in 1991 in the collective monograph "Human microelementoses (etiology, classification, organopathology)", and in 1994 this book was awarded the first prize of the oldest Moscow Society of Natural Scientists in the country.

Fig. 6. The tombstone monument to Alexander Pavlovich Avtsyn on the family plot of the Vagankovsky cemetery in Moscow. Photo by Evgeny Danilov (2014). (Available at: http://mednecropol.ru/a/avtzyn-ap/avtzyn-ap.htm (accessed 20.08.2023))

Рис. 6. Надгробный памятник Александру Павловичу Авцыну на родовом участке Ваганьковского кладбища в Москве. Фото Евгения Данилова (2014). (Доступно по: http://mednecropol.ru/a/avtzyn-ap/avtzyn-ap.htm (дата обращения: 20.08.2023))

A.P. Avtsyn died suddenly on April 20, 1993 in Moscow at the 85th year of his life from acute coronary insufficiency. He was buried at the Vagankovsky cemetery (site 34) of the capital (Fig. 6) [16] . On the basis of the order of the Ministry of Education and Science of the Russian Federation dated 27.07.2021, No. 687, the Scientific Research Institute of Human Morphology was named after Academician A.P. Avtsyn.

LIST OF THE MAIN SCIENTIFIC WORKS OF A.P. AVTSYN

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