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Selected Abstracts

from

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ABBREVIATIONS USED IN "SELECTED ABSTRACTS" - Series III, No. 3

Biull. eksper. biol. i medits. - Biulletin' eksperimental'noi
biologii i meditsiny

Med. parazitol. - Meditsinskaia parazitologiya i
parazitarnye bolezni

Zh. mikrobiol. - Zhurnal mikrobiologii, epidemiologii,
immunobiologii

Zool. zhurnal - Zoologicheskii zhurnal

Institutions

AMS - Academy of Medical Sciences

AS - Academy of Sciences

ASSR - Autonomous Soviet Socialist Republic

IEM - Institute of Epidemiology and Microbiology

MI - Medical Institute

MH - Ministry (Public) Health

SR - Scientific Research

SSR - Soviet Socialist Republic

USSR - Union of Soviet Socialist Republics

210. Noteworthy articles from the report "Materialy nauchnoi konferentsii po prirodnoi ochagovosti i profilaktike chumy, Fevral 1963 g. (Theses of the Conference on the Natural Focality and Prophylaxis of Plague, February 1963). Alma-Ata (1963).

- 1) Aikimbaev, M. A. et al. (Alma-Ata): Present conditions and prospects of the work on the sanitation of the Central-Asian desert plague focus. Pp. 5-8.

The authors of this important note state that at present only two kinds of anti-plague operations are undertaken in the Central-Asian desert plague focus: short-term and comparatively long-term prophylaxis. However, in their opinion the present state of knowledge would permit the implementation of a program for drastic treatment of the focus. The proposals they make for this purpose must be studied in the original text or in a translation.

- 2) Besedin, B. D. (Aral'sk): Distribution and frequency of the domestic mice in the Northern Pre-Aral'e in connection with the importance of these rodents in the epizootiology of plague. Pp. 18-19.

As stated by the author of this brief note, owing to their unusually high frequency sporadic instances of infection among the domestic mice were detected in settlements in 1947 and 1962, while contact with the big gerbils led to the appearance of plague among free-living mice in 1950 and 1958.

- 3) Eremit'skii, N. IA. et al. (Aral'sk): A contribution to the problem of the importance of the domestic mice in the natural plague focus in the Northern Pre-Aral'e. Pp. 84-85.

In this brief note the authors give some details regarding the detection of plague-infected domestic mice in two villages of the Pre-Aral area in 1962. It is noteworthy that the infected animals were found after large-scale eradication campaigns had been conducted in these settlements. However, owing apparently to these campaigns the infection among the mice showed no tendency to spread.

- 4) Bondarenko, M. F. (Dzhusaly): Materials to the epizootiology of plague in the Za-Aral'e. Pp. 29-30.

The author deals briefly with the information available in regard to the plague situation in the area situated

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on the middle course of the Syr-Darya during the period from 1947 to 1962. This territory comprises two deserts divided by the river: the south-eastern part of the Pre-Aral Kara-Kums and the Northern Kyzyl-Kums. In both areas big gerbils were the prevailing species of rodents. Their principal fleas were Xenopsylla skrjabini in the Pre-Aral Kara-Kums and X. gerbilli in the Northern Kyzyl-Kums.

In the first mentioned area plague epizootics were recorded perennially throughout the period of observation; in the less well investigated Northern Kyzyl-Kums waves of epizootics were noted during the periods from 1951 to 1957 and from 1960 to 1962.

The author concluded from his observations that

"The Za-Aral Uchastok of the Central-Asian desert plague focus, must be considered as an area of persisting focality, in which the sandy parts serve for the entrenchment of the infection and the clayish-sandy areas and patches of floodlands as the scene of importations of the disease."

- 5) Bondarenko, M. F. (Dzhusaly): Detection of plague-infected ticks on camels in the Za-Aral'e. Pp. 31-32.

In the course of an acute epizootic taking place in April-June 1961 among big and midday gerbils in the Za-Aral'e the author succeeded in isolating P. pestis from a pool of 15 ticks of the genus Hyalomma collected from three camels.

- 6) Bondarenko, M. F. (Dzhusaly): Observations on a plague epizootic among the rodents of the Aktyubinsk Oblast in 1958. Pp. 30-31

This note contains a brief description of the involvement of the Aktyubinsk Oblast in the widespread epizootic taking place in 1958 in the Trans-Ural plague focus. The presence of the infection in a small suslik as well as in gerbils was also proved. The principal fleas of the gerbils were X. skrjabini and Coptopsylla lamellifer.

- 7) Lisitsyn, A. A. (Alma-Ata): The role of the small susliks in the Volga-Ural plague focus. Pp. 134-136.

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Commenting on the observations made in regard to the plague epizootics among the small susliks in the Volga-Ural plague focus, the details of which must be consulted in the original or in a translation, the author stated that

"Compared to the foci in which marmots and big or small gerbils are the carriers of the infection, the natural foci of suslik plague are of a markedly more ephemeral nature. Still, on account of the high population density of the susliks on enormous territories, the usually intense course of the epizootics among them and the considerable contact between these animals and the human population, these foci are most dangerous for man."

- 8) Likacheva, M. M. and Shepel, D. G. (Alma-Ata): Materials to the epizootiology of plague in the Zachuiskaia Dacha. Pp. 136-138.

The zone of afforestation dealt with by the authors of this report is situated in the triangle formed by the Bet-Pak-Dala (Hunger Steppe) west of Lake Balkhash, the foothills of the Chul-Ili mountains and the valley of the Chu River. Large-scale surveys in this area started in 1959 and led to the detection of plague in the big gerbils (Rhombomys opimus). Intense epizootics were found to occur in 1960 and 1962. The presence of the infection was also demonstrated in a hare (Lepus tolai), in numerous fleas of the genus Xenopsylla and in some ticks. Altogether 160 plague cultures were isolated in the affected area which had a size of about 60,000 hectares. It was not possible to decide whether an independent plague focus existed in this locality or the infection had been imported from neighboring affected areas. The ecological conditions were favorable for a continued existence of plague.

- 9) Shmuter, M. F. et al. (Alma-Ata; Aral'sk; Nukus; Tashkent): Course of the plague epizootics in the Western Kyzyl-Kums. Pp. 263-265.

In the introduction to their article, the details of which do not lend themselves to the purpose of a brief review, the authors stated that

"After the termination of the plague epizootics in the Kyzyl-Kums (in 1956), in the autumn of 1960 again 25 cultures of P. pestis were isolated in two localities ('points') of the Zhan-Darya Valley....

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In 1961, the detachments of three anti-plague stations (the Aral'sk, Nukus and Uzbek stations), isolated in 93 points of the Northern Kyzyl-Kums 672 plague cultures (367 from rodents and 305 from their ectoparasites).

During the first half of 1962, 266 plague cultures (138 from rodents and 128 from ectoparasites) were isolated in 65 points of the Northern Kyzyl-Kums and in the northern fringe of the Bukan-Mereiski sandy massif.

Finally, during the second half of 1962 single plague cultures were isolated from big gerbils in the northern part of the Kyzyl-Kums."

The authors were of the opinion that two types of plague epizootics existed in the Kyzyl-Kums: one with a short periodicity and involving comparatively limited areas and the other appearing at longer intervals and affecting large territories including localities into which the infection had been imported.

- 10) Naiden, P. E. (Tashkent): Dynamics of the plague epizootics in the rodents of North-West Pre-Caspia. Pp. 160-163.

This survey can be quoted by title only.

- 11) Berendiaeva, E. L. et al. (Frunze; Alma-Ata): Experiences of a study of some problems of the ecology of the grey marmots and their fleas with the aid of radio-active labeling. Pp. 16-18.

The authors of this note, the details of which do not lend themselves to the purposes of a brief review, found that the use of radio-active isotopes was suitable for a study of the ecology of marmots and their ectoparasites and also of potential value for studies of the mechanism of the epizootic processes.

- 12) Bibikova, V. A. and Gavriushina, A. I. (Alma-Ata): The multiplication of P. pestis in fleas on plague-immune gerbils. Pp. 25-26.

The authors worked with fleas of sub-species Xenopsylla gerbilli minax which, after having been exposed on big gerbils infected with a virulent plague strain, were

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fed on rodents of the same species immunized with a heat-killed P. pestis culture. A control group of infected fleas was fed on healthy gerbils.

It was found that the fleas fed equally well on the immunized and on healthy gerbils but that the lifespan of infected fleas imbibing immune blood was longer than that of the group feeding on normal blood.

Apparently the feeding with the blood of immunized rodents led to a disappearance of the plague bacilli from the stomach of the fleas. Thus only 55% of fleas fed with immune blood were found infected 19 days later while 100% of the fleas fed on healthy gerbils remained infected.

To judge from preliminary tests, the virulence of the plague strains isolated from fleas which had fed on the immunized gerbils had become attenuated.

- 13) Bibikova, V. A. et al. (Alma-Ata): Observations on the transmission of P. pestis through the bite of unblocked fleas. Page 28.

In order to prove whether infected fleas showing no signs of blockage are capable of transmitting plague the authors used specimens which had been first fed on a white mouse in the agonal stage of the disease and were then permitted to imbibe hemolysed blood through a freshly removed skin of a white mouse stretched over a small mortar which had been filled with such blood. Subsequently, cultivations were made from the blood in the mortar as well as from the inside of the membrane covering it. At the same time the fleas used for the experiments were kept under observation so as to exclude the presence of blockages. In 10 out of 40 such tests, plague cultures were obtained from the inside of the membranes or from the blood upon which the fleas had been fed.

- 14) Bondar, E. P. et al. (Alma-Ata): Some changes in the frequency and distribution of the rodents in the Balkhash-Alakul depression and their possible importance in the plague focus. Pp. 45-47.

As described in this article, the details of which cannot be briefly reviewed, so far the activities of man exerted a favorable influence on the persistence of the plague focus in the Ili-Karatal interfluvial region. Thus the large-scale afforestation with saksaul (Hydroxylon) led to an increase of

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the gerbil populations while the rapidly increasing number of highways facilitated migrations of these rodents thus bringing their different settlements into contact. The periodical changes of climate, though at times inimical to the activity of the focus, were apt at other times to create favorable conditions for the gerbils and to lead to extensions of their habitat.

- 15) Burdelov, A. S. (Alma-Ata): Observations on the importance of the mountainous countries of Eurasia for the formation of the rodent fauna and of the pale-arctic natural plague foci. Pp. 49-52.
- 16) Idem: Considerations on the problem of an epizootiological connection between the Central-Asian desert and mountain plague foci. Pp. 52-54.

These two articles can be quoted by title only.

- 17) Burdo, L. N. (Alma-Ata): Some problems of the pathogenesis of plague. Report I. The septic form of plague. and Pp. 56-57.
- 18) Experimenting with 488 guinea-pigs, the author found that in seven of these animals the plague bacilli were absent from the site of infection. In three of these animals, examined 3-4 days after infection, P. pestis was found to have multiplied in the lymph nodes of the groin, in two, examined on the 4th day after infection, a focus of multiplication of the organisms was found to be present in the deep-lying (para-aortic) lymph nodes; in the last two animals, examined after 5 days, such foci of multiplication of the plague bacilli were also found in the spleen. On account of these findings the author postulated that in the septicemic form of plague, characterized by the absence of external buboes, the primary multiplication of the causative organisms takes place either in the deep-lying lymph nodes or in the internal (parenchymatous) organs.

Report II. A contribution to the problem of primary pneumonic plague. Pp. 58-59.

The author felt entitled to "deny the possibility of a development of primary pneumonic plague." In his opinion the clinical complex of the disease in question had to be considered as a septicemic process.

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The arguments leading the author to these conclusions must be studied in the original text or in a translation.

- 19) Bykov, L. T. et al. (Chinkent; Uralsk): Materials to the role of Rhipicephalus schulzei in the natural plague foci. Report III. Observations on the mechanism of the transmission of P. pestis by the ticks to rodents. Pp. 60-61.

The authors found it possible to produce plague in four out of six susliks when rubbing crushed-up plague-infected ticks into the skin of the animals. However, trials to produce the infection through the bite of plague-affected ticks or by feeding them to susliks gave negative results. The author concluded, therefore, that Rh. schulzei played only an insignificant role in the maintenance and spread of the epizootics. Still, bacteriological examination of ticks was a useful means to detect the presence of plague in the foci.

- 20) Varivodina, T. A. et al. (Frunze): A contribution to the study of the virulence and immunogenic properties of the subcultures of plague strain 1-399. Pp. 61-63.

Forty subcultures of a plague strain isolated in 1957 from a marmot and kept on agar at 4°C with subcultivation twice a year showed "the presence in the microbial population of individual organisms with a different virulence, toxicity and immunogenicity."

- 21) Volosivets, I. F. and Osolinker, B. E. (Alma-Ata): Materials concerning the infectious sensitivity of the different species of gerbils to plague and the peculiarities of plague bacteremia therein. Pp. 63-65.

The authors found the tamarisk gerbils most susceptible to plague, and the big gerbils least susceptible, while Meriones erythrourus occupied in this respect an intermediate position. Analogous findings were obtained when the development of a generalized infection in these three species was compared.

- 22) Volokhov, V. A. and Gavriushina, A. I. (Alma-Ata): Increase of the sensitivity of gerbils to plague infection through the administration of egg-yolk. Pp. 65-67.

The author confirmed that administrations of egg-yolk together with an infecting dose of P. pestis or soon afterwards greatly increased the susceptibility of gerbils to plague infection. Dry egg-yolk, even if not prepared in a sterile manner, gave as good results as freshly obtained egg-yolk.

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- 23) Gauzshtein, D. M. and Kunitskii, V. N. (Alma-Ata): A contribution to the problem of the role of birds in the spread of plague infection. Report I. The fleas of the birds in the south of Lake Balkhash. Pp. 67-69.

The detection of gerbil fleas on birds rendered it likely that the latter might play a role in the spread of plague in the Central-Asian desert plague focus.

- 24) Grekov, P. A. et al. (Nukus): Experience on the suppression of plague epizootics through the destruction of big gerbils in the Karakalpak Kyzyl-Kums. Pp. 74-76.

The conclusions of the authors of this article, the text of which does not lend itself to the purpose of a brief review, were that (a) it is possible to suppress the plague epizootics in the Kyzyl-Kums through simultaneous eradication of the big gerbils in large areas and (b) it was not necessary to repeat the campaigns many times provided that the population density of these animals was kept at a low level in suitably located belts round the treated areas.

It is important to note that, as stated in a footnote, the editors were not yet convinced of the value of the method recommended in sub (b) above.

- 25) Dubianski, M. A. (Aral'sk): Observations on the external signs of the presence of plague epizootics in the settlements of big gerbils during the different phases of the development of the outbreaks. Pp. 76-77.

The descriptions of the author must be studied in the original or in a translation.

- 26) Egorov, R. P. and Osadchaia, L. H. (Alma-Ata): Observations on the variability of plague cultures kept on nutrient media for 5 years. Report I. Pp. 80-81.

Summarizing the results of their observations, the details of which must be consulted in the original of this article or in a translation, the authors stated:

"that in the process of storage for 5 years on Martin agar slants with a pH of 7.2 at a temperature of 7-10°C plague strains isolated in the desert or the mountain focus (of Central Asia) undergo some activation of their biochemical properties and a lowering of their virulence."

- 27) Eremit'skaia, N. A. et al. (Aral'sk): Materials to the variability of P. pestis under natural conditions. Pp. 82-84.

As can be gathered from this article, the original or a translation of which deserve a careful study, the most outstanding feature of the variability of P. pestis consisted of a loss of virulence of the strains which led to a lowering of the intensity of the epizootic observed by the authors. However, a subsequent increase of the virulence was observed in spring and summer, due apparently to the involvement of young, less-resistant gerbils.

Three out of six avirulent strains were isolated from the blood of big gerbils so that in the opinion of the authors

"it was permissible to postulate that the plague bacillus, losing its virulence, may retain the capability of entering into the blood stream of the animals and for some time may remain capable of being spread by fleas."

The avirulent strains were endowed with immunogenic properties.

- 28) Eremit'skii, N. IA. et al. (Aral'sk): The susceptibility and infectious sensitivity of big gerbils in the northern part of the Pre-Aral'e to plague. Pp. 85-87.

The authors worked partly with big gerbils caught in an area free from plague for the last 10 years and partly with the ones from a perennially plague-affected area. Altogether 389 animals were subcutaneously infected with a plague strain having a DCL of 100 organisms for guinea-pigs. It was possible to isolate P. pestis from 138 of the animals under test; 17 more showed morbid signs of plague and in 43 specimens hemagglutination tests gave a positive result. However, the infection rate among the gerbils receiving infecting doses of 1,000 or 1 million organisms was much below that of the animals injected with 100 million organisms. The gerbils from the plague-free zone were much more prone to become infected than those from the plague-affected area.

- 29) Kaluzhenova, Z. P. and Gorbunova, A. N. (Alma-Ata): Destruction of the big gerbils with poisoned grain as a means to suppress the plague epizootics. Report II. Dynamics of the frequency of the fleas of big gerbils and some peculiarities of the biology of these insects. Pp. 94-95.

The contents of this article do not lend themselves to the purposes of a general review. It is, however, important to note that, notwithstanding the presence of fair numbers of the gerbils, two years after an eradication campaign the number of their fleas was found to be greatly reduced.

- 30) Klassovskii, L. N. (Alma-Ata): Observations on the influence of X-rays on some of the fermentative properties of P. pestis and on its resistance to streptomycin. Pp. 103-106.

The author found that X-rays did not exert a marked influence on the fermentative properties of the plague bacillus and failed to render it resistant to streptomycin.

- 31) Klassovskii, L. N. and Terent'eva, L. I. (Alma-Ata): Contributions to a study of the relations of some types of F. pestis in mixed cultures. Pp. 106-108.

Concluding their article the authors stated that

"The results of our experiments indicate that in mixed cultures, containing glycerol-positive and glycerol-negative organisms (strains 1125 and EV) a slow displacement of the latter takes place, apparently on account of their lower rate of growth. In such populations a transfer of the signs of drug-fastness from the resistant to the sensitive organisms is possible. Still, the frequency of this phenomenon is low and exerts no material influence on the rapidity and direction of the population shifts."

- 32) Klassovskii, L. N. and Terent'eva, L. I. (Alma-Ata): Observations on the possibility of obtaining streptomycin-fast forms of P. pestis with the aid of DNA (desoxyribonucleic acid) preparations. Pp. 109-110.

This article can be quoted by title only.

- 33) Klassovskii, L. N. and Terent'eva, L. I. (Alma-Ata): Observations on the influence of inorganic iron on the virulence of P. pestis cultivated on artificial nutrient media. Pp. 110-112.

The authors worked with a plague strain isolated four years previously from a marmot, 10 organisms of which

were fatal for subcutaneously infected white mice. However, subcultivation of this strain led to the appearance and accumulation of avirulent organisms, 20 passages rendering the strain avirulent.

In order to study the influence of inorganic iron on the virulence of the strain the authors added ferrous sulfate ($\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$) to Hottinger's agar in a proportion of 50 mg per 100 ml and subcultivated the strain on plates made with this medium three times a week at 28°C . The growths of every 4th passage were used for virulence tests on white mice with doses of 100,000 organisms.

The appearance of avirulent colonies was noted after 12 passages both in the case of the subcultures made on the iron-containing agar and in that of the controls made on plain agar. However, afterwards the accumulation of avirulent organisms took place more rapidly on the control plates on which no virulent colonies could be detected after the 17th passage and the material from which proved to be altogether avirulent after 22 passages. In the case of subcultivation on iron-containing plates virulent colonies were still found after 42 passages and the material from the plates still proved lethal for white mice after 52 transfers.

Analogous results were also obtained in two further series of tests made with a simplified technique for a description of which the text of the article must be consulted.

The authors concluded

"that the addition of ferrous sulfate to solid nutrient media exerts a retarding influence on the process of the decrease of virulence of the plague bacillus.

The mechanism of this phenomenon is still unclear. One might postulate that an active role is played in this respect by the redox ferments of the hemin series, the most important component of which is iron."

- 34) Kondrashov, V. F. et al. (Gur'ev): Changes in the frequency of the big gerbils and their fleas after destruction of the rodents with poison baits. Pp. 113-114.
- 35) Koturga, L. N. and Basalaeva, T. I. (Alma-Ata): A contribution to the characterization of the pathomorphological

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changes in plague-infected guinea-pigs in relation to the infecting dose. Pp. 115-116.

These two articles can be quoted by title only.

- 36) Krylov, D. G. (Przeval'sk): A contribution to the problem of the sanitation of the Sarydzhask plague focus. Poisoning in large areas and in microfoci. Pp. 117-118.

As described in this note, anti-rodent campaigns conducted on a small scale gave no lasting results.

- 37) Kudinova, T. P. (Alma-Ata): Observations on the lysis of plague cultures in relation to the species of bacteriophage used. Pp. 128-129.

In order to compare the character of the lysis of plague cultures by plague and by pseudotuberculosis bacteriophages, the author inoculated broth tubes with the EV strain or the weakly virulent strain 265 and then added to the tubes either plague or pseudotuberculosis bacteriophages (polyvalent phages prepared in the Central-Asian Anti-Plague Institute) so as to obtain a titer of 10^6 . After different time intervals neutral-red was added to tubes of these two series so as to inhibit the action of the phages. Fifteen minutes after addition of the dye measured quantities of the growths under test were used for the inoculation of agar plates and colony counts were made.

Describing the results of these tests, the author stated that

"In the broth tubes to which pseudotuberculosis phages had been added as well as in the control tubes without phages during the first hours after inoculation the content in viable organisms showed no difference from that originally present. After 24 hours the amount of viable organisms was found to have increased 5-10 times both in the cultures containing pseudotuberculosis phages and in the controls.

After 48 hours and later the content of viable organisms in the tubes with pseudotuberculosis phages was considerably below that in the control tubes but still was some ten or even a hundred times above that originally present. Even after

longer intervals it did not come to a complete lysis of P. pestis in the tubes containing pseudotuberculosis phages.

In the tubes with plague bacteriophages already 30 minutes after the inoculation only 1/5th-1/15th of the viable organisms was present and after 24 hours or later the isolation of viable organisms was exceptional."

- 38) Kudinova, T. P. (Alma-Ata): Influence of the composition of the nutrient medium on the course of lysis of plague cultures under the influence of plague bacteriophage. Pp. 129-130.

The authors found that in tubes containing normal saline into which plague bacilli of the EV strain, plague bacteriophage and Hottinger's broth in a proportion of 1:25 had been implanted, the growth of P. pestis was not inhibited.

- 39) Lavrent'ev, A. F. (Frunze): A contribution to the problem of experimental plague in the yellow suslik (Citellus fulvus) and in C. relictus. Pp. 130-131.

Reporting on the results of tests with a total of 299 animals, the author stated that both species of sisels mentioned in the title of his paper proved to be highly sensitive to plague, young animals being more prone to infection than the adults.

- 40) Lavrent'ev, A. F. (Frunze): Observations on the changes in the susceptibility of red and grey marmots to repeated infection with P. pestis. Pp. 132-134.

In the concluding paragraphs of this article it is stated that

"The results of the tests show that repeated plague infection of the marmots does not invariably prove fatal for the animals. The survivors develop a comparative insusceptibility to the infection, the duration and intensity of which depend upon individual peculiarities of the animals. An immunological transformation of their body apparently takes place more easily during the periods in which a marked difference is present between the susceptibility and the infectious sensitivity of the animals to plague.

One may postulate that, side by side with other factors, the character of the epizootic is to some degree dependent upon the ability of a part of the marmots to develop as a result of a primary contact with a plague resistance to this infection."

- 41) Martinevskii, I. L. and Osadchaia, L. M. (Alma-Ata): The nutritional requirements of plague bacilli isolated in different foci. Pp. 143-145.

The statements of this article do not lend themselves to the purposes of a brief review.

- 42) Martinevskii, I. L. et al. (Alma-Ata; Taldy-Kurgan): Observations on the fate of plague bacteriophages in the body of healthy and plague-infected big gerbils and on the possible routes of distribution of the bacteriophages under experimental conditions. Pp. 145-147.

The authors found that, if subcutaneously administered, plague bacteriophages persisted in the big gerbils for periods up to seven days. In animals of this species to which both phages and plague bacilli had been administered, it was sometimes possible to isolate the phages from the spleen, the liver and the lymph nodes for periods of up to nineteen days, from the blood for up to three days.

Trials to transmit the plague phages per orally through contact or through fleas were not successful.

- 43) Morozova, I. V. and Osadchaia, L. M. (Alma-Ata): Observations on the possibility of the persistence of the plague bacillus in Hirstionyssus meridianus. Pp. 156-157.

The authors found that plague bacilli persisted in the body of H. meridianus which had been exposed on plague-infected gerbils, for up to five days (the limit of observation).

- 44) Miasnik, M. N. (Alma-Ata): Detection of rodents recovered under natural conditions from plague with the aid of the passive hemagglutination tests. Pp. 158-159.

The authors of this note, the details of which ought to be studied, confirmed the great value of the hemagglutination tests for the detection of the presence of plague in

latently affected localities. Inter alia positive results with such tests were obtained in an area in which no plague manifestations had been recorded for about 20 years but in which soon after the tests had been made the infection became manifested once more.

- 45) Nikulina, M. M. and Peisakhis, L. A. (Alma-Ata): Observation on the pathogenesis of plague among medium-sized susliks during the active period of their life. Report II. Peculiarities of the pathomorphology in experimental plague. Pp. 166-167.

The conclusions reached by the authors were that

"1. The pathomorphological changes in plague-affected medium-sized susliks* classify them as animals with a fairly high degree of sensitivity to plague. The young animals during the active period of their life are more susceptible to the infection than the adults.

2. The pathomorphological changes found in individual susliks vary independently from the infecting dose and the interval between infection and death.... In any phase of their active life one finds among the animals individuals which are comparatively resistant to plague."

- 46) Osadchaia, L. M. (Alma-Ata): A contribution to the problem of the importance of the denitrifying property of P. pestis for the identification of its varieties. Pp. 167-168.

Examining a large number of plague strains isolated in Central Asia, the author found that with practically no exceptions the cultures isolated in the desert foci were incapable of reducing nitrates to nitrites whereas the strains from the mountain foci were endowed with denitrifying properties. It thus became possible to distinguish between a gerbil variety and a marmot variety of P. pestis.

(The articles in the volume presently under review which deal with subject other than plague will be enumerated below.)

* Earlier reference to the "medium-sized" susliks has been made in a 1961 article by Peisakhis et al., which has not been available to the present reviewer.

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- 47) Martinevskii, I. L. (Alma-Ata): Some tasks in the genetics of P. pestis in the light of the modern studies on the genetics of bacteria. Pp. 138-139.

This article, containing mainly a survey of the literature available in regard to the genetic relations of P. pestis, cannot be briefly reviewed.

The author claims to have been able to demonstrate an antigenic relationship of plague and pseudotuberculosis bacilli with some strains of E. coli isolated from big gerbils and suggests therefore to place the two first mentioned organisms into the family of Enterobacteriaceae rather than in that of the Brucellaceae.

- 48) Ostrovskii, I. S. and Soldatkin, I. S. (Nukus; Saratov): The infectibility of the fleas of Rhombomys opimus. Experiments. Pp. 169-170.

Experimenting with big gerbils and fleas of the subspecies Xenopsylla gerbilli caspica, the authors found that

"after feeding on a plague-affected gerbil 60-90% of the fleas became infected. A blockage was noted in 15-30% of the infected fleas. The first blocked fleas were observed on the fourth day after the infective meal. The maximal number of blocked fleas was found during the period of 9-16 days after infection. When comparing the results of infection of gerbils with blocked fleas and with fleas which had been picked off at random, no differences could be noted. The fleas were most infective 6-14 days after they had been fed on a gerbil with bacteremia.

Among the gerbils infected through flea-bites in autumn, 39% died of plague as against 44% of those infected in spring....

In the majority of the experiments infected fleas were found only among the specimens collected from gerbils which had succumbed to plague...and only in two of the tests plague cultures could be isolated from fleas exposed on the gerbils 6-12 hours before the death of the latter....

Out of the gerbils infected through the bite of one blocked flea, 50% succumbed showing the presence of a massive agonal bacteremia."

- 49) Peisakhis, L. A. and Muminov, K. M. (Alma-Ata; Chimkent): Observations on the role of the reactivity of the big gerbils to P. pestis during the development of the epizootiological process. Report I. The sensitivity of the big gerbils to plague infection as an index of the contact of their populations with P. pestis. Pp. 171-173.

The details of the findings made by the two authors must be studied in the original text or in a translation. In their opinion the big gerbils, while highly susceptible to plague, showed only a low sensitivity to the infection.

- 50) Peisakhis, L. A. et al. (Alma-Ata; Taldy-Kurgan): Observations on the role of the reactivity of the big gerbils to P. pestis during the development of the epizootiological process. Report II. Dynamics of the hemagglutinins in the big gerbils after a primary contact with P. pestis. Pp. 173-175.

The experimental observations of the authors showed that

- (a) As a result of single administrations of even quite small doses of plague bacilli it comes in the big gerbils to the production of specific antibodies - a fact pointing to their high susceptibility to plague.
 - (b) In the animals infected in winter, the antibodies persisted in their blood for 53-63 days.
 - (c) In a part of the gerbils infected with small doses of P. pestis (10^1 - 10^3 organisms) no antibodies could be found throughout the observation period, while in another part of the animals the antibodies rapidly disappeared and then reappeared. In the animals infected with large doses owing to individual peculiarities the titers of the antibodies showed marked variations.
- 51) Peisakhis, L. A. et al. (Alma-Ata; Taldy-Kurgan): Observations on the role of the reactivity of the big gerbils to P. pestis during the development of the epizootiological process. Report III. Dynamics of the hemagglutinins after a remote repeated contact of the big gerbils with P. pestis. Pp. 176-177.

As described in this article, the authors re-infected 80 of the big gerbils which had been used in the preceding series of observations (see Series II) six months after their initial infection, using single doses of 10^3 organisms. Summarizing the results of this second series of tests, Peisakhis and his associates stated that

"A remote repeated encounter of the big gerbils with the plague bacillus led to a stormy production of antibodies already during the first days after infection. The mean antibody titers were much higher than after the initial infection, and the final disappearance of the hemagglutinins from the blood took place after an almost two times longer period."

- 52) Peisakhis, L. A. et al. (Alma-Ata; Taldy-Kurgan): Observations on the role of the reactivity of the big gerbils to P. pestis during the development of the epizootiological process. Report IV. Experience of the use of the passive hemagglutination reaction for a study of the natural plague focus in the Muiun-Kums. Pp. 178-180.

Analyzing the results of their observations, the authors arrived at the important conclusion that positive results of hemagglutination tests are not of retrospective value but indicate the presence of plague or its manifestation in the near future.

While, therefore, advocating the use of this reaction in the plague foci, the authors considered a further study of its merits under field conditions as indispensable.

- 53) Peisakhis, L. A. et al. (Alma-Ata; Chimkent): A contribution to the morbid anatomy of plague in the big gerbils under natural conditions. Pp. 181-183.

The descriptions given by the authors of this article must be studied in the original or in a translation.

- 54) Petrov, V. S. et al. (Alma-Ata): Organizational principles of the epizootiological observation of the mountainous and desert foci of plague. Pp. 185-188.

The methods recommended by the authors for plague surveys in the Central-Asian foci cannot be briefly reviewed.

- 55) Radchenko, A. G. et al. (Gur'ev; Moscow): Improvement of the organization of the work for the disinsectization of the burrows of the big gerbils. Pp. 193-194.

The proposals of the authors cannot be briefly reviewed.

- 56) Sviridova, L. S. (Alma-Ata): Influence of the relation between the protective medium and the microbial suspension on the viability of the EV vaccine during drying and storage. Pp. 207-208.

As stated by the author, according to the instructions for the manufacture of live anti-plague vaccines, before drying the suspensions of the live organisms it had to be diluted with a protective medium* so as to obtain suspensions containing 70-80 billions organisms per ml. The author found that the addition of the protective medium to the bacterial suspensions exerted a deteriorating effect on the viability of the vaccinal organisms both during the process of drying and during storage.

- 57) Slyenko, O. O. (Alma-Ata): A contribution to the problem of conjunctival vaccination against plague. Pp. 218-220.

Commenting upon experimental work with the EV strain and two other avirulent immunogenic plague strains the author stated that

"as a result of conjunctival vaccination there developed in guinea-pigs an effective vaccinal process which, while causing moderate general and local reactions, terminated after 14-17 days in the formation of an intense immunity against plague. As a result of vaccination through the conjunctival route it comes to an invasion of the body of the test animals by an undetermined amount of the most stable and invasive organisms. These are capable not only of persisting at the site of inoculation but also of penetrating into the regional and more remote lymph nodes; the liver and the spleen, where they produce corresponding morbid changes and initiate an effective immunizatory process. In these features lies the preferability of vaccination by the conjunctival and apparently

* Presumably containing 10% saccharose and 1.25-1.5 gelatine.

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also by the cutaneous routes. One observes in the immunized animals a rapid disappearance of the organisms from the conjunctiva. This phenomenon may render it possible to arrive at an intravital indirect evaluation of the state of immunity against plague based upon observations on the length of survival of the vaccinal organisms in the conjunctiva."

- 58) Stogov, I. I. (Alma-Ata): A contribution to the problem of the rapidity of restoration of the population density of the big gerbils after their eradication. Pp. 222-224.

In view of the favorable conditions created for the big gerbils surviving after eradication campaigns and their consequently rapid and ample multiplication, the author claims that campaigns against this species are effective only if they lead to the destruction of 90% of the animals.

- 59) Khrustselevskaia, N. M. et al. (Alma-Ata): Observations on the variability of the plague bacillus in the fleas. Report II. Passage of the avirulent subculture 610-A through fleas and pregnant guinea-pigs. Pp. 233-235.

In an earlier paper Bibikova, Osadchaia and Khrustselevskaia (1961), reported that by keeping a virulent plague strain for 95 days at 10°C in Ctenophthalmus dolichus they had obtained a strain (610-A) which even in extremely high doses was avirulent for white mice and guinea-pigs.

Bearing in mind that, as shown by Semiotrochev (1961), during the period of pregnancy the susceptibility of the tamarisk gerbils to the EV strain became markedly increased, the present authors tried to enhance the virulence of the strain 610-A with the aid of passages through pregnant guinea-pigs. They also tried to reach this goal by keeping the strain 610-A for a prolonged period in Xenopsylla cheopis and X. minax, two fleas species known to be active vectors of plague.

Summarizing the results obtained with these two methods, the authors stated

"that the avirulent properties of the subculture 610-A remained unchanged when it was passed through the body of 'normal' (i. e., not pregnant) animals, but that under changed

conditions (passage through pregnant guinea-pigs or prolonged existence in the gastrointestinal tract of active flea vectors - X. cheopis and X. minax - it may undergo a change consisting of a marked increase of its virulence."

The authors also fed fleas of these two species through a membrane with blood containing the strain 610-A. They let these fleas periodically bite white mice and examined the latter nine days later. It was possible to isolate from the groin gland of a white mouse sacrificed in this manner seven plague colonies which were found quite virulent, doses of 10,000 organisms produced a fatal bacteremia in white mice. Fleas exposed on these mice became infected.

The authors justly emphasize the importance of these findings.

- 60) Sharets, A. S. et al. (Alma-Ata): The laws governing the natural focality of plague in the Muiyn-Kums. Report III. The course of the epizootic process in the stages of its decline, depression and local exacerbations. Pp. 251-254.
- 61) Shashaev, M. A. (Alma-Ata): Some biological properties of the plague bacteriophage strains. Pp. 254-256.
- 62) Shashaev, M. A. (Alma-Ata): Materials concerning the biology of the pseudotuberculosis bacteriophage. Pp. 256-258.

These three articles cannot be briefly reviewed.

- 63) Shashaev, M. A. and Osadchaia, L. M. (Alma-Ata): An instance of isolation of a pseudotuberculosis bacteriophage from E. coli. Pp. 258-259.

The E. coli strain from which a serologically identified pseudotuberculosis bacteriophage was derived, had been isolated from the spleen of a big gerbil.

- 64) Shvarts, E. A. and Shilaev, L. F. (Frunze): A contribution to the problem of the preservation of P. pestis in nature. Pp. 259-261.

From interesting observations made in 1961-1962 in the Sarydzhaz Uchastok of the Central-Asian mountain plague focus, the details of which must be studied in the original text or in a translation, the authors came to the conclusion

that the marmot fleas are mainly instrumental in carrying over the infection from autumn to spring. However, the authors also adduce evidence to show that an identical role may be played by the marmots themselves.

- 65) Shmuter, M. F. et al. (Alma-Ata): Observations on the possibility of using the (plague) strains 774 and 780 as vaccinal strains. Pp. 261-263.

Out of the two strains dealt with in this note, the strain 774 was obtained in 1951 in the Kyzyl-Kums through animal passage from a big gerbil, while the strain 780 was directly cultivated soon afterwards from the bone-marrow of a rodent of the same species. Careful investigations showed that the two strains exhibited all properties rendering them suitable for use as vaccinal strains.

- 66) Shmuter, M. F. and Volokhov, V. A. (Alma-Ata): Observations on the frequency of isolation and the intensity of growth of the plague bacillus from the organs and tissues of the big gerbils as well as from their fleas. Pp. 266-268.

The authors analyzed the results of the laboratory examination of the big gerbils, obtained in the course of the field work in 1961 and 1962, in order to determine the frequency with which plague bacilli were isolated from the various organs of the animals and to evaluate the abundance of these growths.

These studies showed that, when making bacteriological examinations of plague-suspect gerbils, best results could be obtained when making massive cultivations from the liver, the spleen and the blood, and resorting as well to animal experiments. If it was impossible to make cultivations from all three organs, such from the spleen proved best.

In order to obtain a rapid answer to the question whether or not plague was present in a given locality, cultivations from flea pools proved superior to those from the rodents. The authors noted in this connection that while the cultures from the flea pools yielded mostly an abundant growth in about 1/3 of the cultures made from the organs of the gerbils only single colonies grew.

- 67) Shunaev, V. V. et al. (Alma-Ata): Use of synthetic preparations as colloidal component of the fluid vehicle of the anti-plague vaccine. (The Institute of Organic Chemistry, AS, USSR, Moscow.) Pp. 268-270.

As maintained by the authors, the medium presently added to the live plague vaccines before drying and storage is unsatisfactory because it contains gelatine, a substance which is often contaminated and cannot be subjected to prolonged sterilization under pressure. Moreover, gelatine exerts a protective action on the vaccinal organism only during the process of drying but not during prolonged storage, especially at the temperatures prevailing in summer.

The authors tried, therefore, to use polymers of the group of vinyl compounds ("hemodez" or "synprol"), in addition to the EV vaccine before the lots were subjected to drying and storage. They found that these polymers (a) did not exert a bacteriostatic or bactericidal action; (b) exerted during the process of drying a protective action not inferior to that of gelatine; (c) exerted such an action also during storage.

- 68) Saakiantz, V. G. and Babaeva, N. G. (Anti-Plague Station of the Tashkent Railroad): Action of galenical preparations of some species of St. John's wort (Hypericum) on the cholera vibrio and the plague bacillus. Pp. 200-201.

In vitro tests made by the authors of this note showed that galenical preparations made from some Hypericum species exerted a bactericidal action on cholera vibrios and plague bacilli.

- 69) Iakovlev, M. G. et al. (Alma-Ata; Taldy-Kurgan): Destruction of the big gerbils with grain poison baits as a means of suppressing plague epizootics. Report I. Dynamics of the frequency of the big gerbils after their destruction. Pp. 272-273.

Summarizing the results of eradication campaigns against the big gerbils in the Ili-Karatal interfluvial area, the authors found that in localities where 92-98% of the rodents had been destroyed with the aid of zinc phosphide baits, under favorable ecological conditions in the populations were restored to the original level after 3-4 years. Less effective eradication campaigns led to a shortening of this period.

- 70) Iakovlev, M. G. et al. (Alma-Ata; Taldy-Kurgan): Destruction of the big gerbils with grain poison baits as a means of suppressing plague epizootics. Report III. Anti-epizootic efficacy of the destruction of the gerbils. Pp. 274-276.

The authors of this article stressed that single eradication campaigns against the big gerbils merely lessened

the danger of an actually present epizootic but did not prevent future manifestations of the infection. Further work was therefore necessary to keep the gerbil populations at a low level and to prevent a transition of the infection to other rodent species. The authors noted in this connection that P. pestis could persist in the gerbils for a prolonged time (252 days in the big gerbils and 418 days in the midday gerbils).

- 71) Gorbunova, E. F. and Volobueva, V. K. (Ural'sk): Character of the infectious sensitivity and of the bacteremia in midday gerbils and small susliks in relation to the origin of the plague strains. Pp. 280-282.

As pointed out by the authors of this article, Levi and his associates (1958, 1959, 1960) had maintained that the infectious sensitivity of the rodents to plague and the character of the bacteremia in them depended on the origin of the strains used for their infection - a postulation which was not substantiated by other observers. For a further study of this problem the present authors worked with 72 susliks and 108 midday gerbils, infecting them with either a plague strain isolated from a big gerbil or one obtained from C. pigmaeus or finally a strain of marmot origin. Thirty-six white mice served as controls.

Commenting on the observations thus made, the authors stated

"that, regardless of the origin of the strains used, characteristic for the small susliks was a high infectious sensitivity, a prolonged and massive bacteremia; for the midday gerbils a low sensitivity to plague infection and a short-lasting bacteremia. Some differences in the sensitivity of the animals to the infection and in the character of the bacteremia depended not upon the origin of the strains but to some differences in their virulence."

On account of these findings the authors expressed the fear that in the Volga-Ural plague focus there existed the possibility of a transition of the infection from the midday gerbils to the susliks and its persistence in the latter species.

Articles dealing with subjects other than plague

A. Tularemia

1. Roshchin, V. V. et al. (Alma-Ata): The natural tularemia focus in the Kochetav Oblast of the TSelinni Krai. Pp. 197-198.

This note briefly describes a tularemia focus detected in Kazakhstan in 1962.

2. Ershova, L. S. (Alma-Ata): Ticks of the species Ornithodoros papilippes as reservoirs and vectors of the tularemia bacillus. Page 88.

Quoted by title.

B. Brucellosis

1. Uzbekova, B. R. (Alma-Ata): Epidemiology and prophylaxis of brucellosis in the TSelinni Krai. Pp. 229-231.
2. Uzbekova, B. R. (Alma-Ata): Characterization of the brucellosis foci in the TSelinni Krai. Pp. 231-233.

These two notes, dealing with the quite serious brucellosis situation in the TSelinni Krai of the Kazakhstan, do not lend themselves to the purposes of short reviews.

3. Abdullina, G. A. et al. (Alma-Ata; Taldy-Kurgan; Semipalatinsk): Character of the immunological transformation in persons immunized with the brucellosis vaccine prepared from the strain 104-M. Pp. 276-278.

The investigations of the authors led to the conclusion that the vaccine prepared from the strain Br. abortus 104-M was inferior to that manufactured with the strain Br. abortus 19.

4. Dobrotsvetova, T. IA. (Alma-Ata): Experience on the cutaneous administration of a corpuscular antigen for the detection of an allergy against brucellosis. Pp. 278-279.

This note refers briefly to the tentative use of a brucellosis allergen, more fully dealt with in a hitherto unpublished article of the author and his associates.

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C. Q-fever

1. Semenova, N. I. and Oleinikova, Z. K. (Osh): A contribution to the characterization of the Q-fever focus in the foothills of the Chatkal mountain range. Pp. 208-209.

As stated in this note, in 1961 serological proof for the presence of Q-fever was obtained first in the human population of the Osh Oblast (Kirghizia) and then in sisels (C. relictus) and in 1962 in red-tailed gerbils.

D. Cholera

1. Golovko, E. N. et al. (Dushanbe): Water vibrios in some of the waterways of Tadzhikistan. Report I. Pp. 71-73.
2. Tikhomirova, M. M. (Ashkhabad): The variability of cholera and water vibrios under the influence of cholera bacteriophage. Pp. 224-225.
3. Tikhomirova, M. M. (Ashkhabad): The viability of cholera vibrios in sea-water. Pp. 226-227.

These articles are quoted by title.

211. Iandik, G. T. et al., Tularemia and its prophylaxis. Annotation. Vrachebnoe delo (1965) 2: 141.
(From the Sanitary-Epidemiological Station of the Lugansk Oblast and the Rostov SR Anti-Plague Institute.)

As stated in this note, tularemia was first recorded in the Lugansk Oblast (Ukraine) in 1941. From 1946-1949 the disease was frequent, involving mainly the northern part of the oblast. In 1950 a lull set in and only one outbreak was noted in the Moiseevka Village (Melovoye Raion) in 1956. The total of 724 cases recorded during recent years was evidently below the mark.

The outbreaks in the human population were causally related to the epizootics among the mice and allied species of small rodents. Besides infections due to contact with tularemia-affected rodents, the manifestations of the disease in man were found to be due to various causes, such as contaminated food, water, transmission through insects and also to infected grain handled in mills or stores.

The absence of the disease since 1957 seems to be due to mass vaccination campaigns as well as to an improvement of the methods of agriculture, which led to a decrease of the rodent populations. Until 1957 vaccinations were administered throughout the oblast, but since then the campaigns are restricted to raions which appear to be under the risk of infection.

212. Naumov, A. I., The metabolism of the vitamins B₁ and C in brucellosis. Annotation. Vrach. delo (1965) 2: 143.
(From the Department of Infectious Diseases and Epidemiology and the Department of Biological Chemistry of the Saratov MI.)

The findings of the author led to the conclusion that in the treatment of brucellosis it was essential to administer ascorbic acid and thiamine.

213. Trudy nauchno-issledovatel'skogo protivochumnogo instituta Kavkaza i Zakavkaz'ia (Collected Papers of the SR Anti-Plague Institute of the Caucasus and Transcaucasus). Vypusk 3 (1959).

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- 1) Kratinov, A. G., Contributions to the pathology of the digestive system in plague. Pp. 5-149.

Contributions to the pathology of the cardiovascular system in plague.

- 2) Kratinov, A. G., Report I. Influence of the plague toxin on the reactivity of the cardiovascular system to acetylcholine and on the cholinesterase of the blood. Pp. 150-182.
- 3) Idem: Report II. Observations on the influence of the toxic substances of the plague bacillus on the reactivity of the cardiovascular system to histamine. Pp. 183-202.
- 4) Vlas'iants, O. V., Report III. Observations on the reactivity of the cardiovascular system to adrenalin and caffeine in plague intoxication. Pp. 203-223.
- 5) Idem: Report IV. A contribution to the problem of the influence of the toxic substances of the plague bacillus on the resistance of the skin capillaries. Pp. 225-234.

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- 6) Idem: Report V. Morphological changes of the blood vessels of the internal organs of some rodent species in plague and plague intoxication. Pp. 235-250.
- 7) Kratinov, A. G. and Gol'mov, V. P., Observations on the influence of the toxic substances of Bact. pestis on the adrenal content in the suprarenals of white rats. Pp. 251-258.
- 8) Kratinov, A. G. and Khar'kova, N. M., Ascorbic acid content in the organs of rodents in plague intoxication. Pp. 259-274.
- 9) Kratinov, A. G. and Maksimenko, M. A., A contribution to the problem of the mechanism of the Sanarelli-Swartzman phenomenon in plague. Pp. 275-301.
- 10) Kratinov, A. G. and Vlas'iants, O. V., The activity of cholesterinase in the blood of sheep and donkeys in hyperimmunization with live plague cultures. Pp. 302-331.

These well documented articles, to which English summaries are appended, can be quoted by title only.

214. Pogodina, V. V. and Khan Shi-Tsze, A study of the correlation between the pathogenicity of the viruses of tick-borne encephalitis group for animals and the peculiarities of their multiplication in the body. Report II. Observation with the aid of the fluorescent antibody technique of a non-infectious virus antigen in animals infected with the Malayan virus Langat (TR-21). Voprosy virusologii (1965) 1: 30-36.
(From the Institute of Poliomyelitis and Virus Encephalitides, AMS, USSR.)

As summarized by the authors, the peculiarity of the infection with the Langat virus

"consisted of a discrepancy between the signs of cell infection indicated by the results of the fluorescent antibody tests and the virus content in the cells. The virus antigen could be demonstrated in many cells of the extraneural tissues and the central nervous system, notwithstanding, the absence or great scarcity of the infectious virus in these cells."

215. Vorob'eva, M. S., An experimental study of the humoral immunity in reptiles infected with the tick-borne encephalitis virus. Vopr. virusol. (1965) 1: 36-41.
(From the Institute of Poliomyelitis and Virus Encephalitides, AMS, USSR.)

The author found that experimental infection of lizards of the species Eremias velox and Agama caucasica with the tick-borne encephalitis virus led to an accumulation of specific virus-neutralizing and hemagglutination-inhibiting antibodies in the blood sera of these animals. The antibodies appeared earliest and reached the highest titers if the lizards were kept at 37°C, but remained absent in animals kept at 4°C.

216. Somov, G. P. and Vinogradov, V. IA., An experimental study of some modifications of the indirect hemagglutination test used in the case of tick-borne rickettsiosis of Northern Asia. Vopr. virusol. (1965) 1: 83-87.
(From the Vladivostok SR Institute of Epidemiology, Microbiology and Hygiene.)

The experimental studies of the authors showed that the indirect hemagglutination test was suitable for the diagnosis of tick-borne rickettsiosis 4-6 days after the infection of experimental animals.

217. Terskikh, I. I. and Bekleshova, A. IU., Aerosol immunization against ornithosis with a tissue vaccine. Preliminary communications. Vopr. virusol. (1965) 1: 99-100.
(From the D. I. Ivanovskii Institute of Virology, AMS, USSR.)

As stated in the introduction to this article, about 30% of the persons engaged in the breeding or handling of domestic birds contract ornithosis, becoming unable to work for periods of up to one month, and some of the sufferers become chronically ill with pneumosclerosis, cardiac affections or hepatitis. Measures of general hygiene, including ventilation of the working premises and of personal prophylaxis (use of respirators) are not sufficient to prevent infections because they are not universally applied. Under these circumstances the use of a method of specific immunization is most important. Some workers, like Wagner et al. (1946), could render animals resistant to ornithosis only through intraperitoneal vaccine injections but not when administering the vaccine by inhalation.

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The present authors tried to produce an immunity against ornithosis by the administration of a killed tissue vaccine in the form of aerosols. The vaccine used by them did not contain serum protein, was transparent and could be administered in the form of small particles. It was prepared from the ornithosis strain B adapted to chicken fibroblast cultures. Inactivation of the vaccine was effected through prolonged action of a temperature of 37°C in the presence of merthiolate.

The antigenic properties of the vaccine were assayed with the aid of complement and neutralization tests in three tiems immunized hamsters, rabbits and guinea-pigs. Challenge tests were made in special aerosol chambers. The vaccine was dispensed with the aid of a metallic sprayer devised by Gromyko and Kashin (1952), producing a stable vapor which could be easily inhaled by the test animals. It was found that vaccinations three times repeated at intervals of 7-10 days gave the best results in white mice, guinea-pigs and hamsters. This method of immunization protected 65-70% of the white mice against aerosol infection with the strains Iori and B in doses of 100 and 1,000 LD₅₀, while apparently 100% of the challenged guinea-pigs and hamsters survived and all controls succumbed.

The authors pointed out that further trials of the vaccine in monkeys were indispensable before it could be recommended for the immunization of man.

218. Gaidamovich, S. IA. and Duan Suan Myou, A diagnostic reagent for hemagglutination tests with the Japanese encephalitis virus.
Vopr. virusol. (1965) 1:105-110.
(From the D. I. Ivanovskii Institute of Virology, AMS, USSR.)
219. Dreizin, R. S. et al., Different possibilities for using the hemagglutination and hemagglutination-inhibition tests in the case of adenoviruses.
Vopr. virusol. (1965) 1:111-117.
(From the D. I. Ivanovskii Institute of Virology, AMS, USSR.)

These two well documented articles can be quoted by title only

220. Kamalov, I. I., Detection of the presence of Rickettsia burneti with the aid of indirect hemagglutination test. Preliminary communication.
Vopr. virusol. (1965) 1:117-118.

The author found that indirect hemagglutination test (Boyden, J. Exp. Med. 93 [1951]: 107) suitable for the detection of the Q-fever antigen.

221. Ierusalimskii, N. D. et al., A new principle of regulating the composition of the media during the uninterrupted cultivation of microorganisms.
Mikrobiologiya 34 (1965) 1: 73-78.
(From the Institute of Microbiology, AMS, USSR.)

The illustrated description of the apparatus designed by the authors must be studied in the original or in a translation.

222. Martyniuk, IU. V. et al., Detection of Q-rickettsiosis in fevering patients. Clinical and laboratory data.
Vrach. delo (1965) 3: 99-101.
(From the SR Institute of Epidemiology, Microbiology and Hygiene, MI, L'vov.)

The conclusions reached by the authors of this article were that

"1. Through repeated serological examinations of the sera of fevering patients it was shown for the first time that sporadic cases of Q-rickettsiosis are met with in the western oblasts of the USSR.

2. A clinical study of these patients permitted to establish that the disease is of a polymorphous character and shows in a part of the sufferers features of an affection of the respiratory organs. For the diagnosis of Q-rickettsiosis the large-scale use of serological tests is indispensable.

3. Complement-fixing antibodies begin to appear in the serum of the patients on the 9th-10th day after onset of the disease.

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4. In the majority of the cases contact with agricultural animals or consumption of dairy products form the source of infection.

5. The observation of initial cases of Q-fever deserves the attention of the medical practitioners."

223. Galushkin, I. P., Affection of the respiratory organs in ornithosis. Annotation. Vrach. delo (1965) 3: 134.
(From the Clinic of Infectious Diseases of the MI, Voronezh.)

Reporting briefly upon thirty-seven ornithosis patients, the author stated that seven of the sufferers showed the features of a typhoid affection, twenty-four those of pneumonia and six those of an influenza-like affection. The pneumonic affections were mostly of an atypical character, detectable only through X-ray examination. Complement fixation tests with ornithosis antigen gave a positive result in all patients, intracutaneous allergic tests were positive in twenty-nine.

224. Potapov, A. A., A contribution to the methodology of testing new (insect) repellents.
Med. parazitol. 34 (1965) 1: 41-45.
(From the E. I. Martsinovskii Institute of Medical Parasitology and Tropical Medicine.)

This article cannot be briefly reviewed.

225. Ishmukhametov, A. I., Use of the radio-isotope method of investigation in some fields of parasitology.
Med. parazitol. 34 (1965) 1:101-106.

This survey, to which a moderately long reference list is appended, quoting mainly western publications, can be quoted by title only.

226. Sotnikova, A. N. and Soldatov, G. M., Isolation of the tick-borne encephalitis virus from jays.
Med. parazitol. 34 (1965) 1:114-115.
(From the Anti-Plague Station of the Primorsk Krai, Ussuriisk.)

The authors recorded the isolation of a strain of tick-borne encephalitis from a group of forty-four jays (Garulus glandarius) examined by them. This species of birds was found to be parasitized by ticks, particularly by Ixodes persulcatus.

227. Speranskaia, V. N., A contribution to the problem of disinsectization against Ceratophyllus (Nosopsyllus) fasciatus and X. cheopis under field conditions. Author's Review. Med. parazitol. 34 (1965) 1:117-118.

DDT proved best among the various insecticides tested by the author.

228. Dukhanina, N. N., Soviet literature dealing with the problem of medical parasitology and parasitic disease (1964) Med. parazitol. 34 (1965): 118-123.

Noteworthy among the articles enumerated in the reference list compiled by the author are the following:

1. Merinov, V. A., The ecology of the tick Dermacentor nuttalli and its importance in the epizootiology of Northern-Asian rickettsiosis. In: Problemy medits. parazitologii i profilaktiki infektsii. Moscow (1964): 621-643
2. Petrishcheva, P. A. et al., Observations on the prolonged persistence of R. burneti in ticks collected in the natural foci. Ibidem, 644-649.
3. Tagil'tsev, A. A., Observations on the importance of the life schemes of gamasid ticks for an evaluation of the participation of these ticks in the circulation of Q-fever in the natural foci of the steppe type. Ibidem, 660-664
4. Skobskii, I. L., Clinical forms of tick-borne encephalitis. In: Aktual'nye voprosy teorii i praktiki nevrologii i psikiatrii. Odesskii psikhoneurol. institut (1963): 87-88.
5. Dudnikova, A. F. et al., Length of life of fleas of the genus Xenopsylla - natural vectors of plague. Izvest. AN Turkmensk SSR, ser. biol. nauk (1964) 4: 63-68.
6. Mironov, N. P. et al., Localization of the fleas in the burrows of small susliks and rationalization of the methods of counting their numbers. Zool. zhurnal 42 (1963) 3:384-394.

229. Trudy Armianskoi protivochumnoi stantsii (Collected Papers of the Armenian Anti-Plague Station). Vypusk 3, Erevan (1964).

- 1) Mkrtchian, S. A., A contribution to the problem of natural focality of plague in Armenia. (From the Armenian Anti-Plague Station.) Pp. 7-15.

After referring to the plague epizootic observed in 1958-1959 on the Leninakan plateau in the north-west of Armenia, in which mainly Microtus arvalis and its flea Ctenophthalmus teres were involved, the author dealt with a further manifestation of the disease in Armenia in 1962-1963, taking place in the Sisian Raion in the south-east and in Martuni Raion, lying further north-west south of the Seban Lake. In the Sisian Raion forty-seven plague strains were isolated in 1962 - sixty-three from M. arvalis and thirty-four from its fleas Ctenophthalmus wladimiri (the principle vector), Ceratophyllus (Nosopsyllus) caspius, Frontopsylla elata (three species hitherto unknown as vectors), and from Amphipsylla rossica.

The outbreak in the Sisian Raion, starting in June, reached its acme in July and terminated in the middle of August. However, in February 1963 near the localities involved in 1962 thirty-five plague strains were isolated from fleas collected in the nests of M. arvalis.

In the Martuni Raion, which like the above mentioned area was situated in a mountainous region more than 2,000 m above sea level, in August 1962 a plague culture was isolated from Ct. wladimiri, but careful investigations failed to prove the presence of the infection in the local rodents.

Characteristic for the epizootic observed in the Sisian Raion were its occurrence in separate and comparatively small areas, its slow progress and absence of acute affections among the infected rodents which, having been invariably caught alive, often showed the signs of resolving plague (abscesses in the liver and spleen). The strains isolated with the aid of cultural methods from the fleas were of a low virulence, not causing the death of experimental animals.

Commenting upon his observations, the author pointed out that they were not only analogous with those in Armenia in 1958-1959, but that an independent role of voles in the

perpetuation of plague had been postulated also by Kartman and his associates in the USA (see Ann. N. Y. Academy of Sciences 70 [1958]). Nevertheless, the present author maintained that possibly in Armenia

"the infection passed from the populations of other rodents to M. arvalis, in the body of which P. pestis in the process of adaptation acquired some new properties, through which the strains isolated in the highly mountainous foci differ from the properties typical for the plague bacillus."

The author noted in this connection that, as established by Sardar (1956), the voles of the species M. arvalis are somewhat resistant to plague and suggested that this factor might be responsible for the attenuation of the strains circulating in the populations of these animals. However, in his opinion further investigations were necessary to solve the problem of plague in Armenia.

- 2) Vartanian, A. A. et al., The plague epizootic in Armenia in 1962. (From the Armenian Anti-Plague Station and the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 17-29.

The 1962 epizootic in Armenia observed by the authors of this article was preceded by the appearance of plague at the end of May of the same year in the Shakhbuz Raion of the Nakhichevan ASSR situated to the south-east on the Turkish border. The presence of the infection in Armenia was confirmed soon afterwards through the isolation of two plague strains from fleas (Amphipsylla rossica and Frontopsylla elata caucasica) collected from nests of M. arvalis. From then until September the presence of epizootics was noted in six localities in which fourteen plague cultures were isolated from these rodents and thirty-four from fleas of the species Ct. wladimir, C. (N.) caspius, F. elata caucasica and A. rossica.

Commenting upon their observations in the affected localities, which are set forth in some detail, the authors postulated with much reason that these foci and those involved in the 1958-1959 epizootic in the Leninkan Raion were parts of one large epizootic area in the mountainous part of Armenia.

Dealing in general with the role of M. arvalis in plague, the authors pointed out that though the presence of even widespread epizootics in this species was well known, it was usually assumed that these outbreaks were secondary to the initial appearance of the infection in some reservoir species. In Armenia in particular the susliks of Asia Minor (C. citellus xanthopyrmus) had been inculcated in this respect. The authors emphasized, however, that a careful search for the presence of plague in this species, conducted from 1959 to 1962, had given no results and that likewise no evidence of the infection had been found in the gerbils present in various regions of Armenia. Moreover, the 1962 epizootic took place in areas inhabited neither by the susliks nor by the gerbils. It also deserved great attention that the plague strains isolated from M. arvalis and their fleas were so peculiar that Levi and his associates (1961), and Kanatov (1961) classified them as a separate "vole" variety of P. pestis.

For these reasons the authors arrived at the tentative conclusion that the voles formed the reservoir of plague in the mountain areas of Armenia. They admitted, however, the necessity for a further study of this interesting plague focus.

- 3) Aliev, M. N. et al., The plague epizootic in the high mountain area of the Nakhichevan ASSR. (From the Azerbaidzhan Anti-Plague Station.) Pp. 31-43.

As can be gathered from a table compiled by the authors of this report, the following rodent and flea species were found involved in plague and tularemia epizootics taking place in 1962 in the subalpine zone of the Nakhichevan Autonomous Republic:

<u>Species</u>	<u>Number of Strains Isolated</u>	
	<u>Plague</u>	<u>Tularemia</u>
<u>Microtus arvalis</u>	15	4
Water-rat	1	-
<u>Meriones persicus</u>	-	1
Forest mouse	8	2
Transcaucasian hamster	-	3
Grey hamster	-	2
Forest dormouse	1	-
<u>Ct. wladimiri</u>	25	-
<u>Fr. elata caucasica</u>	2	-
Tick (<u>Hyalomma</u>)	-	1

Dealing with the mainly involved M. arvalis, the authors stated that

"affected animals of this species were met with very rarely and the infection in them ran a rather peculiar course. A generalized infection with growth of P. pestis from all organs was exceptional. More often the cultivations from the organs of the rodents gave negative results, but cultures could be obtained with the aid of animal experiments."

It was also characteristic that it had not been possible to find plague-infected carcasses of these voles and that apparently only two of the 1,045 animals trapped alive succumbed to the disease, during their observation in the laboratory, showing signs of a generalized infection.

Tests to assess the susceptibility of M. arvalis to plague with strains of the "vole" variety or with a strain of gerbil origin gave the following results:

<u>Month</u>	<u>Infected With Vole Strains</u>		<u>Infected With Gerbil Strain</u>	
	<u>Number Tested</u>	<u>Succumbed to Plague</u>	<u>Number Tested</u>	<u>Succumbed to Plague</u>
July	20	1		
August	28	4		
September	21	8 ^a	21	13
October	42	15 ^b		

Remarks: (a) P. pestis was also isolated from a surviving animal.
 (b) Plague cultures were also obtained from 6 surviving animals.

Thus the susceptibility of the voles to experimental plague infection was considerably higher in autumn than in summer.

The experimentally infected voles often showed a slight but long-lasting bacteremia which became intensive in the agonal

period. In the opinion of the authors this slow development of the bacteremia explained the comparative rarity of naturally infected voles and also made it clear why positive findings were made only in fleas found in empty burrows but not in those collected from trapped plague-infected voles.

Commenting upon their findings the authors maintained

"that a perpetuation of P. pestis in the populations of M. arvalis is possible. This does not mean that we recognize unconditionally the existence of a natural plague focus in the mountain area with M. arvalis as the reservoir. To arrive at this conclusion would be premature, the more so as many aspects of the problem have not yet been elucidated. The problem of a possible connection between the plague focus in the lowlands of Transcaucasia and the epizootics in the mountain area is still unsolved."

The authors noted in this connection that Meriones erythrorus (the plague reservoir in the lowlands of Transcaucasia) was quite susceptible to infection with the vole strains whereas, as shown in the table, thirteen out of twenty-one M. arvalis infected with a gerbil strain succumbed to plague. It was also noteworthy that in some areas settlements of Meriones persicus were found in the mountains, thus approaching the habitations of M. arvalis. Actually in the Lachinsk Raion the two species were found to live side by side. Moreover, the authors stated,

"The isolation, in February 1963, of ten plague strains (similar to the vole strains) from fleas of M. persicus and M. vinogradovi in the southern part of the Dzhul'fa and Nakhichevan raions confirms a connection between the two species."

Nevertheless, the authors maintained that the epizootics in M. arvalis were not of a fortuitous character but that plague had existed among them for some time. This view was supported by the peculiarities of the cultures obtained from these rodents and their fleas, such as their comparatively low virulence and the fermentation of rhamnose.

- 4) Vartanian, A. A. et al., Observations on the fundamental properties of the plague strains isolated in 1962 in the territory of Armenia. (From the Armenian Anti-Plague Station and the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 45-49.

Examining forty-four of the strains which had been isolated in 1962 from M. arvalis or their fleas, the authors found that

- (a) All the strains produced within 24 hours had an incomplete acidification of rhamnose and within 2-4 days an acidification of lactose.*
- (b) Tests with nine of the strains showed that they were little virulent for guinea-pigs. Only one of the animals tested succumbed after 11 days to subcutaneous injection of one billion organisms.

Generally speaking the properties of the 1962 strains were identical with those isolated in North-Western Armenia in 1958-1959.

- 5) Mikhailova, R. S., The systematic status of the plague strains isolated in Armenia in 1962. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 51-56.

The author of this article entertained no doubt that the strains isolated in Armenia, even though they acidified rhamnose, were such of P. pestis. She noted in this respect that Levi and his colleagues (1962) had demonstrated the presence of Fraction I in the vole strains and that, as shown by Vartanian and his associates (1964), some of these cultures were found to engender a fairly solid immunity in guinea-pigs against challenge with classical plague bacilli.

For reasons it would lead too far to discuss at the present juncture, Mikhailova was not in agreement with the proposal of Levi and his co-workers to classify these strains as belonging to a "vole" variety of P. pestis and suggested for them the name of P. pestis semiplenus. She stressed the

* It is of great interest that, as discussed by Mikhailova (1964), the plague strains isolated in the lowlands of Transcaucasia also had acidified lactose. In the opinion of Mikhailova this suggested the possibility of a genetic relationship between the plain and mountain strains of P. pestis.

need for a further study of these strains, particularly in order to demonstrate the possibility of their reversion into the classical form of the plague bacillus. She recommended for this purpose further experiments including such on monkeys and also careful clinical and laboratory observations of all patients with feverish diseases in the raions where vole epizootics were detected.

- 6) Davtian, G. G. et al., Conditions of the circulation of P. pestis in the populations of M. arvalis. Report I. Susceptibility of M. arvalis to the "vole" variety of the plague bacillus. (From the Armenian Anti-Plague Station and the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 57-62.

Concluding their article, the authors stated

"that the common voles (M. arvalis) of the high-mountain focus of the Armenian SSR are highly resistant to the vole variety of P. pestis. Still, the vole herds react non-uniformly to plague infection: one could observe instances of death from plague in animals infected with small doses. In a part of the animals the plague bacilli survived in the lymph nodes up to 15 days (limit of observation). White mice were highly susceptible to infection with the vole variety of P. pestis."

- 7) Noramirian, A. V. et al., Conditions of the circulation of P. pestis in the populations of M. arvalis. Report II. Character of the bacteremia in common voles infected with the "vole" variety of the plague bacillus. (From the Armenian Anti-Plague Station and the SR Anti-Plague Institute of Caucasus and Transcaucasus.) Pp. 63-68.

The authors of this report summarized that the bacteremia in voles infected with the "vole" of P. pestis was slight. It was possible, however, that in these animals the bacteremia was present only for brief periods, shorter than the intervals between the bleedings of the animals (8 hours) and thus was apt to be overlooked. In white mice the vole strains produced a longer-lasting and intense bacteremia.

- 8) Elkin, IU. M. and Davtian, G. G., Conditions of the circulation of P. pestis in the populations of M. arvalis. Report III. Infectious sensitivity and character of the

bacteremia in common voles infected with a plague strain isolated from M. erythraeus. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus and the Armenian Anti-Plague Station.) Pp. 69-73.

Summarizing the results of their observations, the authors made the following statement:

"Comparing the results obtained when evaluating the infectious sensitivity and the character of the bacteremia in common voles infected with a plague strain isolated from red-tailed gerbils with the data recorded in our previous publications, one can arrive at the following conclusion: the 'gerbil' variety of P. pestis proved in our tests considerably more virulent for the common voles than the 'vole' variety. Still, also in the present experiments no absolutely lethal doses for the voles could be determined, even though the highest dose used for infection of the animals was 100 million organisms. A bacteremia was observed in 50% of the voles under test and reached a high degree (confluent growth on the plates) in part of the animals. At the same time in the case of infection with the 'vole' variety blood cultures yielded either single colonies or remained sterile."

- 9) Elkin, I. U. M. et al., Conditions of the circulation of P. pestis in the populations of M. arvalis. Report IV. Infectious sensitivity and character of the bacteremia in common voles infected with a plague strain of marmot origin. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus and the Armenian Anti-Plague Station.) Pp. 75-79.

The authors established that a strain of marmot origin was far more virulent for the common voles than the "vole" strains. Still, it was not possible to determine the absolutely lethal dose of the marmot strain even though the highest infective dose used amounted to 100 million organisms.

A bacteremia was observed in 58% of the voles infected with the marmot strain and reached in some instances a high degree.

- 10) Davtian, G. G. et al., The importance of M. arvalis in the focality of plague. Report I. Infectious sensitivity and

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- 12) Kratinov, A. G. et al., A contribution to the problem of the sensitivity of the common voles of the Dzhavakhetsko-Armianskoe Nagor'ie to the toxic substances of P. pestis. Preliminary communication. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus and the Anti-Plague Armenian Station.) Pp. 97-106.

The authors of this article, the details of which must be studied in the original or in a translation, came to the tentative conclusion that the common voles trapped in the Dzhavakhetsko-Armianskoe high mountain area were highly resistant to the toxic substances in autolysates of the EV strain. They expressed the belief that this resistance was partly responsible for the slow progress of the 1962 plague epizootic.

- 13) Kratinov, A. G. et al., Observations on the ascorbic acid content in the organs of the common voles and other rodents inhabiting the high mountain zone of the plague epizootics in the Dzhavakhetsko-Armianskoe Nagor'ie. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 107-119.

The conclusions reached by the authors of this article were that

- "1. In June and July 1962 one could observe in the organs of the common voles inhabiting the epizootic uchastki of the mountain plague focus in the Shakhbuz Raion of the Nakhichevan ASSR a sufficiently high ascorbic acid content. The vitamin C content in the common voles of this population did not differ from that in the animals of this species living in the vicinity of the Kardoniks Station in the Northern Caucasus.
2. In the females of the common voles, which were pregnant or had given birth and were in the rutting stage, one could note a considerable lowering of the ascorbic acid content in a number of organs, particularly in the suprarenals.
3. The relative weight of the suprarenals (the suprarenal coefficient) was higher in the females of the common voles than in the males.
4. Among the common voles of the mountain area one could find a considerable number of animals

with a more or less hypertrophied spleen. The mean spleen coefficient of this herd of common voles was twice that of the weight of the spleen in the common voles of the Northern Caucasus.

5. The sufficiently high ascorbic acid content in the common voles at the time of the 1962 epizootic was apparently one of the factors conditioning their comparatively high resistance to plague not only in experiments but also in the foci of the infection."

- 14) Avanian, L. A. et al., The iron level in the blood and liver of rodents showing a different degree of sensitivity to plague. (From the SP Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 121-133.

The conclusions reached by the authors of this article, the text of which does not lend itself to the purpose of a brief review, were that

"The data collected by us permit to assume that most probably in the rodents comparatively little sensitive to plague the ability of storing iron in the liver is greater than in highly sensitive rodents. At the same time the percentage of iron in the blood as compared to that in the liver is higher in rodents highly sensitive to plague than in those with a low sensitivity.

Still, our data does not permit to consider these findings as valid for all species investigated by us."*

- 15) Strachkova, V. P., Influence of iron on the virulence of the plague bacillus during passage of the cultures on artificial media. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 135-141.

As stated in the conclusions to this article, the author found that

"1. After 30 successive passages under aerobic conditions on artificial media containing an

* I. e., guinea-pigs, white mice and rats: Sciartopoda telum; midday and big gerbils: M. erythrourus; common voles: European suslis.

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increased concentration of iron salts, the virulence of the plague culture 138 did not show perceptible changes.

2. After passage under anaerobic conditions one could note in some instances a lowering of the virulence.

3. Anaerobic cultivation on media containing guinea-pig blood as a nutritive substrate conditioned some increase of the virulence of the growths."

- 16) Mikhailov, R. S., Observations on the serological relations between the plague bacillus and the bacteria of the enteric group. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 143-151.

The conclusions to this article, the details of which must be studied in the original or in a translation were that

1. Examination of 346 plague strains with agglutinating sera raised against the bacteria of the intestinal group yielded positive results in 31 instances (8.9%). Plague serum agglutinated 46 out of 165 cultures of various enterobacterial species.

2. It was possible to confirm with the aid of cross agglutination and antibody absorption tests the presence of common antigenic components in a part of the plague strains and the enterobacterial strains.

3. The presence of antigens peculiar to the bacteria of the enteric group in plague strains did not stand in relation to other biological properties of the latter and, as far as could be ascertained, cannot be used for an intraspecies grouping of the P. pestis strains.

- 17) Lalazarova, I. G., Observations on the sensitivity of P. pestis to terramycin in vitro. (From the SR anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 153-161.

This well documented article can be quoted by title only.

- 18) Bykova, Z. A., Some properties of the plague phages. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 171-176.

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Examining six strains of plague bacteriophage the author came to the conclusion that they may be considered as belonging to one group and to be of one serological type.

- 19) Bykova, Z. A., The resistance of plague phages to inactivating agents. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 177-186.

This article must be studied in the original or in a translation.

- 20) Bykova, Z. A., Interaction of the plague bacteriophages with bacteria. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 187-193.

The author found the plague bacteriophages highly specific, capable of lysing besides the homogenous strains of P. pestis only single pseudotuberculosis strains.

- 21) Sakanian, A. B., Experience of the fight against common voles in the highly mountainous zones of the Armenian SSR. (From the Armenian Anti-Plague Station.) Pp. 347-352.

Judging from earlier experiences in the north-west of Armenia (where from 1959-1961 at the time of an epizootic a campaign against the common voles (Arvicola arvalis) had been conducted in an area of 650,000 hectares) and from tests made in 1962 in the Sisian Raion in the southeast of the republic, the author concluded that grain baits containing 8-10% of zinc phosphide were effective for the fight against this species of rodents.

- 22) Miroshnichenko, M. A., A short history of tularemia in the Stavropol Krai during the period from 1938 to 1961. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 241-262.

As can be gathered from this article, the detailed statements of which cannot be briefly reviewed, tularemia was active in the Stavropol Krai at the time of World War II, when the territory was for some time occupied by the German armed forces.

- 23) Pilipenko, V. G., Results of a study of combined cutaneous vaccination against plague, tularemia and brucellosis. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 263-279.

As shown by the author through tests on guinea-pigs and human subjects, combined vaccination against the infections mentioned in the title of this article gave satisfactory results.

- 24) Pilipenko, V. G. and Shchekina, T. A., Observations of the prolonged harborage of virulent tularemia bacilli in immune guinea-pigs. (From the SR Anti-Plague Institute of the Caucasus and Transcaucasus.) Pp. 281-290.

The conclusions reached by the author of this well documented article were that

- "1. In ninety-eight immune guinea-pigs observed within periods of from 100 to 600 days after challenge with massive doses of virulent tularemia bacilli, a harborage of these organisms was observed in 34 instances. The length of harborage varied from 163 to 580 days.
2. Most frequently the virulent tularemia bacilli were isolated from the lungs and the groin lymph nodes, more rarely from the spleen and the liver. Examinations of the bone-marrow and the brain proved invariably negative.
3. In the case of thirty-four guinea-pigs, in which a prolonged harborage was proved, it was possible to isolate the tularemia bacilli seven times through direct cultivation on egg-yolk media from the lungs and two times through cultivation from the groin lymph nodes.... Animal experiments were necessary to prove the existence of the organisms in the spleen and the liver.
4. The tularemia cultures isolated from immune guinea-pig showed their initial virulence and other typical properties.
5. A considerable number of the animals showed at autopsy morbid features in their internal organs, which were most marked in the lungs."

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- 25) Ogandzhanian, A. M., Ixodes ticks of the southern raions of the Azerbaidzhan SSR. (From the Zoological Institute, AS, Armenian SSR.) Pp. 359-366.

Quoted by title.

- 26) Mirzoeva, M. N., Observations on the Ixodes ticks in the tularemia focus of the Checheno-Ingush ASSR. (From the Sanitary-Epidemiological Station of the Checheno-Ingush ASSR.) Pp. 367-370.

As can be gathered from this article, the species of Ixodes ticks involved in the tularemia outbreaks were Dermacentor marginatus, Hyalomma sulcata, H. otophila and H. plumbeum.

- 27) Tovmasian, M. S. and Matevosian, L. Sh., Influence of the vaccine dose on the intensity of humoral shifts in persons re-vaccinated against smallpox. Preliminary communication. (From the Armenian Anti-Plague Station.) Pp. 293-300.

This article can be quoted by title only.

- 28) TSaturian, F. A. and Noramirian, A. V., State of the fight against brucellosis in the human population of some raions of the Armenian SSR. (From the Institute of Epidemiology and Hygiene of the Armenian MH, and the Armenian Anti-Plague Station.) Pp. 209-217.

As can be gathered from this article, the details of which must be studied in the original or in a translation, the recent incidence of brucellosis in the Armenian SSR was as follows:

<u>Year</u>	<u>Total Cases</u>	<u>Incidence per 10,000</u>	<u>Year</u>	<u>Total Cases</u>	<u>Incidence per 10,000</u>
1952	322	2.2	1957	379	2.3
1953	475	3.2	1958	591	3.5
1954	348	2.3	1959	350	2.0
1955	402	2.5	1960	258	1.4
1956	301	1.8	1961	193	1.09

Referring to the problem of vaccination, the authors stated that the brucellosis incidence in the persons vaccinated

subcutaneously was 0.4% and in those cutaneously vaccinated 0.13% as against an incidence of 2.5% in a control group. However, in their opinion the appearance of the disease in the immunized groups was due to failures in the technique of vaccine administration and to an improper storage of the vaccine.

- 29) Mnatsakanian, A. G. and Siulakhian, Kh. R., Clinical and epidemiological characterization of brucellosis in vaccinated and nonimmunized persons. (From the Sanitary-Epidemiological Station of the Armenian Republic and the 4th Medical Center of Erevan.) Pp. 219-228.

This article can be quoted by title only.

- 30) Mnatsakanian, A. B., Contribution to the problem of the specific prophylaxis against brucellosis in the Armenian SSR. (From the Sanitary-Epidemiological Station of the Armenian Republic.) Pp. 229-239.

As stated by the author of this well documented article, the number of anti-brucellosis vaccinations administered in the Armenian SSR and the incidence of the disease among the immunized during the period from 1958 to 1962 were as follows:

<u>Year</u>	<u>Total Vaccinated</u>	<u>Suffered from Brucellosis</u>	<u>(Percentage)</u>
1958	70,158	35	(0.05)
1959	354,321	20	(0.005)
1960	368,603	40	(0.01)
1961	321,485	30	(0.009)
1962	254,311	38	(0.01)
<u>Totals</u>	<u>1,368,878</u>	<u>163</u>	<u>(0.011)</u>

On account of these experiences the author praised the value of anti-brucellosis vaccination.

230. Pilipenko, V. G. et al., Immunological efficacy of various methods of the cutaneous administration of the combined vaccine against plague, tularemia and brucellosis. Zh. mikrobiol. (1965) 1: 14-21.
(From the Stavropol Anti-Plague Institute of the Caucasus and Transcaucasus.)

The authors obtained identical immunological responses through (a) the simultaneous but separate administration of the monovaccines against plague, tularemia and brucellosis; (b) inoculation with a mixture of these monovaccines and (c) the administration of the dry trivaccine prepared with strains of these bacterial species.

Administering the vaccines it was imperative to avoid too shallow scarifications which, in the opinion of the authors, were in the first line responsible for the absence of takes.

231. Kniazeva, E. N., The vaccinal process in guinea-pigs simultaneously immunized with live brucellosis and Q-fever vaccines. Zh. mikrobiol. (1965) 1: 47-52.
(From the Gamaleia IEM, AMS, USSR.)

The findings of the author indicated that a simultaneous immunization against brucellosis and Q-fever was permissible.

232. Aleksandrov, N. I. et al., The immunogenicity of the chemical anti-anthrax vaccine in experiments on sheep.
Zh. mikrobiol. (1965) 1: 57-60.

The authors established that single or twice repeated administrations of the chemically prepared anti-anthrax vaccine previously referred to in these reviews (see Abstract No. 476, Series I) were capable of protecting sheep against challenge with 100 DCL of virulent anthrax bacilli.

233. Adamov, A. K. and Karpuzidi, K. S., A rapid method of brucella identification with the aid of alizarin suspensions of agglutinins. Zh. mikrobiol. (1965) 1:103-107.
(From the Rostov-on-Don Anti-Plague Institute.)

As described in this article, the authors obtained strictly specific and rapid results when using alizarin suspensions of agglutinins, prepared according to the method of Adamov (1959)* for the identification of brucellosis strains.

* Adamov, A. K., A method for the rapid observation of pathogenic bacteria with the aid of alizarin suspensions of antigens. Riga (1959).

234. Mukhamedov, S. M., Epidemiological and epizootiological peculiarities of brucellosis in Uzbekistan. Report I.
Zh. mikrobiol. (1965) 2: 61-65.
(From the Sanitary-Epidemiological Station of the Uzbek Republic.)

Summarizing the results of his observations, the author stated that

"1. An epidemiological peculiarity of the present brucellosis situation in the Uzbek SSR is the lowering of the morbidity in the professional contingents and an increase of the incidence of the disease in the other parts of the population, particularly in the towns. An epizootiological peculiarity is the increase of the affections in the 'small cattle' (i.e., in the sheep and goats).

2. Brucellosis outbreaks in human beings infected through milk and dairy products render it necessary to revise the organization of veterinary and sanitary measures in the farms in which the presence of brucellosis in the cattle has been bacteriologically confirmed."

The author also stresses the need for further studies in regard to the ecology and bacteriology of brucellosis.

235. Martinevskii, I. L., The nature of the bacterial strains isolated from Rhombomys opimus in the Tezhen-Murgabsk interfluvial area. Turkmenian SSR.
Zh. mikrobiol. (1965) 2:136-140.
(From the Central-Asian Anti-Plague Institute.)

As discussed by the author in the introduction to his article, since 1956 atypical plague strains were isolated in the Tedzhen-Murgab interfluvial area, which were weakly virulent for susliks and gerbils and avirulent for guinea-pigs and Afghan voles but killed domestic mice in doses of 100 organisms.

An exhaustive examination of two of these strains, for the detailed results of which the original or a translation must be consulted, led the author to the conclusion that these strains could not be classified as P. pestis. He stressed in this connection that his two strains grew on the medium of Lederberg (1950) which was free from amino-acids, that they did not produce

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pesticin and split urea within twenty-four hours; moreover, one of the two strains proved to be motile. However, in the opinion of the author further studies are necessary before these strains can be finally classified.

236. Dieva, N. N., Reactions to the intracutaneous administration of anthraxin in persons immunized against anthrax. Author's Review. Zh. mikrobiol. (1965) 2:143-144. (From the Sanitary-Epidemiological Station of the Orlov Oblast.)

Allergic tests with anthraxin gave a positive result in only 52% of the fifty-six persons studied by the author. In a majority of them the positive reaction disappeared already within 30-40 hours.

237. Tarasova, L. P., The experiences of I. I. Mechnikov in the study of cholera. Zh. mikrobiol. (1965) 2:145-149. (From the Mechnikov Moscow Vaccine and Serum Institute.)

This well documented article can be quoted by title only.

238. Sakanian, A. B., Experience of the fight against the common voles in the highly mountainous areas of the Armenian SSR. Trudy Armianskoi protivochumn. stantsii 3 (1964): 347-353. (From the Armenian Anti-Plague Station.)

As described in this article, good results in the fight against the common voles (M. arvalis) of Armenia were obtained in a campaign conducted at the time of the 1959-1961 epizootic in an area of 65,000 hectares on the Leninakan Plateau as well as in minor tests made in the Sisian Raion in 1962. The author recommends the use of grain baits containing 8-10% zinc phosphide.

239. Kazantsev, A. P., Treatment of ornithosis with antibiotics. Sov. medits. (1965) 2: 47-53. (From the Department of Infectious Diseases of the Order of Lenin S. M. Kirov Military-Medical Academy.)

This amply documented article, in which the author records observations he personally made in seventy patients

suffering from ornithosis, does not lend itself to the purpose of a brief review. In the opinion of the author it is indicated to combine the antibiotic treatment of the disease with the administration of ornithosis vaccine.

240. Kharchenko, L. A., The diagnostic importance of the titration allergic test in brucellosis. Mikrobiologichnii zh. (Ukrainian) 27 (1965) 1: 59-65. (From the Donets MI.)

As stated in the Russian summary to this article, the author used the allergic titration test devised by Khaikina and Selivanova (Biull. eksper. biol. i medits. 41 [1956] No. 2) for the examination of forty-nine brucellosis patients and sixty-five workers of a meat-packing plant, who six months ago had been re-vaccinated with a live attenuated anti-brucellosis vaccine. It was found that the titration method indicated more clearly the intensity of the allergic state and was, therefore, useful for a differentiation of the allergic processes induced respectively by an attack of the disease and by vaccine administration.

241. Balaeva, N. M. et al., Fluorescent antibodies for the observation of rickettsiae. Literature survey. Zh. mikrobiol. (1965) 3: 17-21. (From the Gamaleia IEM, AMS, USSR.)

This amply documented article can be quoted by title only.

242. Malikova, M. V., A study of the peroxidase activity of the brucellae. Zh. mikrobiol. (1965) 3: 52-56. (From the Odessa I. I. Mechnikov IEM.)

Studying eighty brucellosis strains the author found that all three species of brucellae show a peroxidase activity which may be demonstrated with the aid of the qualitative benzidine test and the semi-quantitative test of Krémery (J. Hyg. and Epid., Prague [1959] 3:314).

243. Shevtsova, Z. A., A study of the virulence of the vaccinal brucellosis strain after its presence in an irradiated organism. Zh. mikrobiol. (1965) 3: 56-58. (From the Gamaleia IEM, AMS, USSR.)

As described in this article, guinea-pigs which had been irradiated with doses of 200 r, and three days later were immunized with 1 billion doses of the strain Br. abortus 19-BA, were sacrificed three, ten, twenty or thirty days after the immunization in order to obtain subcultures of the organisms for a study of their invasive power. Twenty of the growths studied did not differ in this respect from the parental strain, while five showed a slight intensification of their invasive powers.

244. Saveleva, R. A. and Ananova, E. V., Experimental observations on the pathogenesis of the pulmonary form of tularemia. Zh. mikrobiol. (1965) 3: 65-70.
(From the Gamaleia IEM, AMS, USSR.)

The conclusions of the authors were that

- "1. Guinea-pigs and white mice are susceptible and sensitive to tularemia infection by inhalation to almost the same degree as to subcutaneous infection while white rats are more sensitive to the former mode of infection.
2. The possibility of an appearance of primary tularemic pneumonia has been confirmed through guinea-pig experiments. The inflammatory process starts in the lung tissue, spreads to the tracheo-bronchial lymph nodes and becomes rapidly completed by a generalization of the infection.
3. The specific inflammatory process in the lungs of the guinea-pigs consists of a series of successive phases: partial atelectasis, hyperemia and edema of the interalveolar septa with formation of polymorphonuclear infiltrates; then the process assumes a specific granulomatous character with signs of necrobiosis and necrosis."

245. Shashaev, M. A. et al., The length of the period of isolation of plague and pseudotuberculosis bacteriophages from big gerbils.
Zh. mikrobiol. (1965) 3: 97-101.
(From the Central-Asian SR Anti-Plague Institute and the Taldy-Kurgan Anti-Plague Station.)

The conclusions of the authors of this article, the details of which deserve a close study, were that

"1. In the body of the big gerbils the presence of plague and pseudotuberculosis bacilli did not lead to a multiplication of the corresponding phages. The latter soon after their introduction became adsorbed by the organs of the reticulo-endothelial system, particularly the spleen.

2. The multiplication of any phages in the body in the presence of the homologous bacterial strains is difficult; this is confirmed by the numerous failures met with when using phages of the treatment of infectious diseases.

3. A vector-borne transmission of the plague phages is apparently very rare under natural conditions."

246. IUshchenko, G. V. et al., Peculiarities of the distribution of some bacterial infections in the urban rodent populations. Zh. mikrobiol. (1965) 3:101-106. (From the Central Anti-Plague Observation Station, MH, USSR.)

The authors noted the frequency of infections like pseudotuberculosis, listeriosis, pasteurellosis, erysipeloid and salmonellosis in the urban rodent populations. Most affected with these infections were the Norway rats, the house-mice, the common voles and field mice. Under these conditions it was necessary to pay great attention to deratization and to the implementation of general sanitary measures, especially in danger spots like meat-packing plants, farms for animal-breeding and store-houses for vegetables.

247. Shliakhov, E. N. et al., Dynamics of the immuno-allergic and morphological reactions in experimental vaccination against anthrax. Zh. mikrobiol. (1965) 3:106-111. (From the Moldavian Institute of Hygiene and Epidemiology, Kishenev.)

The observations recorded by the authors regarding the relation between the phenomena produced by anthraxin tests

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and the morphological appearances of the immune reactions in guinea-pigs vaccinated against anthrax must be studied in the original or in a translation.

248. Marder, V. L. et al., Observations on ornithosis in the Latvian SSR. Zh. mikrobiol. (1965) 3:135-136.
(From the Republican Sanitary-Epidemiological Station, Riga.)

The authors of this note described an ornithosis outbreak involving fifteen persons which took place in May and June 1963 in the fowl-handling section of a meat-packing plant in Balva (Latvian SSR).

249. Khokhlov, D. T., Influence of streptomycin on the efficacy of experimental immunization with live vaccines. Report III. Administration of streptomycin after completion of the immunization with tularemia vaccine. Author's Summary. Zh. mikrobiol. (1965) 3:145-146.
(From the Order of Lenin S. M. Kirov Military-Medical Academy.)

The authors found that the administration of streptomycin to white mice in moderate therapeutic doses for six days following vaccination against tularemia did not lower the resistance of the animals to challenge tests with virulent tularemia bacilli made three weeks after the immunization. If ten times increased streptomycin doses were used, about 50% of the animals succumbed to the challenge.

250. Poluliakh, P. A. et al., Increase of the efficacy of the biological method of examination in brucellosis. Annotation. Zh. mikrobiol. (1965) 3: 148.
(From the Kirghiz Anti-Plague Station.)

As stated in this note, the administration of egg-yolk simultaneously with that of the vaccinal brucellosis strain 19, facilitated the isolation of the organisms when the test animals (guinea-pigs, white mice, golden hamsters) were sacrificed at intervals varying from five to thirty days.

251. Pun'ko, T. A. et al., The vibrios of the Neva River and the basins of the Leningrad mercantile port. Report II. Annotations. Zh. mikrobiol. (1965) 3:148-149.

Quoted by title.

252. Egorov, V. A. et al., Results of a search for antibodies to various rickettsia antigens in a limited group of people. Annotation. Zh. mikrobiol. (1965) 3: 149. (From the Kazakh Institute of Epidemiology, Microbiology and Hygiene.)

During the period from 1960 to 1962 selected groups of the population in the frontier regions of Kirghizia, the Kazakhstan and the Tuva ASSR, were tested in regard to their immunity against some rickettsioses (R. burneti, R. mooseri, D. sibiricus) with the aid of complement fixation tests. Altogether 776 persons were examined, Positive results with the R. burneti antigen were obtained in 8.2%, with the R. mooseri antigen in 0.13% and with the D. sibiricus antigen in 0.65%.

253. Sorkin, IU. I., Some results of the use of the concentrated dry anti-anthrax vaccine STI in Eastern Siberia. Annotation. Zh. mikrobiol. (1965) 3: 150.

The author found that the dry concentrated anti-anthrax vaccine caused partly more marked local reactions than the fluid STI vaccine, and produced more frequently positive results in skin tests with anthraxin than the latter.

254. Golubeva, V. N. and Anisimova, T. I., The "survival phenomenon" in white mice after the simultaneous administration of a vaccinal and a virulent plague strain. Annotation. Zh. mikrobiol. (1965) 3: 151.

As stated in this note, after the simultaneous administration of the EV strain in a dose of 10 million organisms and of a virulent plague cultures in doses ranging from 1 to 64 DCL (for white mice), one could observe a "survival phenomenon," i.e., the white mice could resist the administration of definitely lethal doses of a virulent plague strain. If the dose of the latter equalled 2 DCL, up to 100% of the animals survived, in the case of a dose of 32-64 DCL, 30-40% of the test animals survived.

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255. Kerrev, N. I., Ku-likhoradka v Kazakhstane (Q-fever in the Kazakhstan). Alma-Ata (1964). 110 pp.
Zh. mikrobiol. (1965) 3:154-157.

This rather unfavorable book review can be quoted by title only.

256. Tatishvili, N. I. et al., Influence of brucella antigens on cell cultures of the spleen of sensitized guinea-pigs. Biull. eksper. biol. i medits. 59 (1965) 3: 68-71. (From the Moscow Institute of Virus Preparations and the Institute of Parasitology and Tropical Medicine, Tbilisi.)

The authors concluded their article by stating that

"under the action of the brucellosis antigen on the cells of the spleen of animals sensitized with brucelleae, one can observe a marked cytopathogenic effect, manifested by a decrease of the absolute number of cells, damage to the macrophages and reduction of the percentual content in lymphoid cells. Characteristic is also the formation of agglutinates, consisting of lymphoid cells. The brucellosis antigens did not exert a marked cytopathogenic effect in normal guinea-pigs and also when they were not heterologically sensitized with (human) gamma-globulin and E. coli."

257. Ershov, F. I. et al., Multiplication of the virus of Venezuelan equine encephalomyelitis in cells treated with actinomycin D. Antibiotiki 10 (1965) 3:250-255.
258. Zhdanov, V. M. and Ershov, F. I., Inhibition of the production of the virus of Venezuelan equine encephalomyelitis with the aid of puromycin. Antibiotiki 10 (1965) 3:255-259.

These two papers, published by workers of the Ivanovskii Institute of Virology, AMS, USSR, are quoted by title.

259. Shakarian, G. A. et al., Influence of monomycin on the immunization processes in immunization of animals with brucellosis vaccine. Antibiotiki 10 (1965) 4:337-338.
(From the Department of Microbiology of the Erevan Zooveterinarian Institute.)

The authors summarized that

"monomycin, introduced in a dose of 20,000 units/kg per day to rabbits simultaneously with the administration of the vaccine, and seven days afterwards exerts an inhibiting action on the process of the formation of agglutinating and complement-fixing antibodies and on the complementary activity of the serum. The inhibiting action of monomycin on the formation of antibodies is comparatively more marked if this antibiotic is used simultaneously with the vaccine."

260. Makarovskaia, L. N., Observations on monomycin-dependent forms of the plague bacillus. Antibiotiki 10 (1965) 4: 348-357. (From the Rostov-on-Don SR Anti-Plague Institute.)

As described in this article, the details of which must be studied in the original or in a translation, the author was able to produce monomycin-dependent strains of P. pestis through cultivation of the organisms in fluid or on solid media containing this antibiotic.

261. Materialy IV nauchnoi konferentsii po prirodnoi ochagovosti i profilaktike chumy (Theses of the 4th Scientific Conference on the Natural Focality and Prophylaxis of Plague). Alma-Ata, March 1965. (Chief Editor M. A. Aikimbaev.)
(From the Central-Asian SR Anti-Plague Institute.)

- 1) Aikimbaev, M. A. (Alma-Ata): To the Institute--15 years.
Pp. 5-7.

This introductory note gives a short history of the Central-Asian Anti-Plague Institute since its foundation in 1949. The area under its supervision in Central Asia and the Kazakhstan measures about 200 million hectares. Assisting in the work of the Institute are eight anti-plague stations

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under the Ministry of Health, USSR, four such stations maintained by the Ministry of Communications and twenty Sanitary-Epidemiological stations in the Kazakhstan, Kirghizia, Uzbekistan and Tadzhikistan.

The number of plague cultures isolated under the auspices of the institute during the last decade amounted to 13,769, 2,496 of which were isolated in 1964. Production of anti-plague vaccine was started by the institute in 1951.

- 2) Agun'kin, V. I. et al. (Gur'ev; Alma-Ata): Results of prolonged campaigns against the big gerbils in the Gur'ev Oblast. Pp. 7-9.

Campaigns against the big gerbils were conducted by the Gur'ev Anti-Plague Station from 1948 to 1963 in an area of 3,280,700 ha with zinc phosphide baits. In 1963 tentative use was made also of baiting with barium fluoroacetate.

In the experience of the authors satisfactory results in the fight against the big gerbils could be obtained only through repeatedly conducted campaigns in large areas in which the gerbils were confined by natural borders.

- 3) Dmitriuk, G. IA. et al. (Dzhambul): The 1962-1964 plague epizootic in the north-eastern part of the Muyun-Kums. Pp. 85-87.

As described by Dmitriuk and his associates, the following evidence of plague epizootics became available during the period from 1962 to 1964 in the north-eastern part of the Muyun-Kums, a desert area in the Dzhambul Oblast of the Kazakhstan south of the Chu River:

	<u>1962</u> <u>Autumn</u>	<u>1963</u> <u>Spring</u> <u>Autumn</u>	<u>1964</u> <u>Spring</u> <u>Autumn</u>
Area of epizootics (in thousands of hectares)	100	120 30	15 5
Cultures from big gerbils	36	52 5	3 3
(Percentage of cultures obtained only with the aid of animal experiments)	16	37 60	100 33
Percentage of infected gerbils	3.7	4.2 1.1	1.1 2.8
Cultures from fleas	31	29 -	9 1

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According to these observations, the epizootic reached a peak in the spring of 1963 when, besides Rh. opimus, midday and red-tailed gerbils, Lepus tolai and steppe polecats became involved. In the autumn of 1963 infected gerbils were found only in four localities and sporadic infections continued to be present in 1964. In the opinion of the authors, the decline of the epizootic was due to a mortality of the gerbils from an unknown cause which led in the spring of 1964 to a practical disappearance of the animals in an area of 100,000 ha and to a marked decrease of their population density in the surrounding territories.

- 4) Zaitsev, V. A. et al. (Chimkent): Characterization of the plague epizootic in an Uchastok of the northern part of the Muyun-Kums. Pp. 107-109.

As stated by the authors, the presence of plague in the Muyun-Kums was first detected in 1958 when an acute epizootic took place in an area near the villages of Karabugat and Algatart in the northern part of the desert. After a period of quiescence lasting until 1962, the infection became again active in the spring of 1963, the epizootics reaching a peak in the spring and summer of 1964, when an area of more than 650,000 ha became involved and, besides from the big gerbils, plague cultures were obtained from species like the red-tailed gerbils and the yellow susliks. Owing to a low incidence of the rodent fleas and a lesser activity of the big gerbils the epizootic declined in the autumn of 1964 even though the latter animals remained numerous.

- 5) Bykov, L. T. (Chimkent): Plague in the Muyun-Kums in 1963-1964. Pp. 55-57.

This article, which recapitulates the observations of the above quoted authors and also refers to those of Tuchin and Sharets (see below), is mentioned by title only.

- 6) Tuchin, G. A. and Sharets, A. S. (Chimkent): Observations on the isolation of P. pestis in the Muyun-Kums. Page 265.

As stated in this note, up to the spring of 1964 it had not been possible to find evidence of the presence of plague in the rodents of the southern part of the Muyun-Kums. However, hemagglutination tests made with the sera of big gerbils caught in the vicinity of the village Kenes gave in the spring of 1964 positive results in 9% of the animals tested. In the autumn of the same year an examination of 245 big gerbils of

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4,222 fleas yielded ten plague strains from the rodents and four from their fleas. Later on, in a locality 3 km to the south, sixteen more plague strains were obtained from the same sources.

- 7) Bykov, L. T. et al. (Chimkent): Characterization of the plague cultures isolated in the Muyun-Kums. Pp. 57-58.

As can be gathered from this article, the 1,028 plague cultures examined in the Muyun-Kums during the period from 1958 to 1964 were almost exclusively of a typical character and virulent. They all acidified glycerol-containing media but not the ones containing lactose. Eight of the 1964 cultures acidified rhamnose-containing media on the 5th day.

- 8) Diatlov, A. I. et al. (Tashkent): Materials to the epizootiology of plague in the Kyzyl-Kums. Pp. 92-93.

As stated in this brief note, a plague epizootic among big gerbils, raging in 1961 in the Dzhana-Dar'insk Uchastok, spread in the spring of the following year into the Bukanbel'tinsk Uchastok. In the center of the latter, which was densely populated by the gerbils, in November 1963 an area of about 10,000 ha became the scene of an epizootic which continued during the spring of 1964. During this period thirty-seven plague cultures were isolated from 3,782 big gerbils and 104 strains from over 100,000 fleas collected from these rodents or their burrows. The epizootic led to the death of 80% of the gerbil population while half of the survivors reacted positively in hemagglutination tests. Since the population density of the gerbils at the end of the epizootic (June 1964) averaged only 0.3 per ha, a disappearance of plague from this locality seemed probable.

- 9) Kichatov, E. A. et al. (Frunze; Alma-Ata): Observations of P. pestis in the north-western part of the Tau-Kums. Pp. 119-120.

The authors of this brief report succeeded in detecting in the autumn of 1964 the presence of plague* in the north-western part of the Tau-Kums, a desert area situated south of Lake Balkhash on the left shore of the Ili River.

* N. B. This plague manifestation was also discussed in a note by A. S. Burdelov et al. entitled "Independent Populations of Rodents in the Area South of the Lake Balkhash and Plague Epizootic." Ibidem, pp. 46-47.

In the first of the two affected "points" cultures of P. pestis were isolated from (a) a pool of Coptopsylla lamellifer fleas; (b) a Xenopsylla hirtipes and (c) X. skrjabini, all obtained from one colony of Rh. opimus. In the second affected locality the carcass of a midday gerbil was found which proved to have succumbed to a generalized plague infection.

- 10) Postnikov, G. B. et al., Course of plague epizootics in the Ural-Emba interfluvial area. Pp. 207-209.

The incidence of plague epizootics in the Ural-Emba interfluvial area since their detection in 1951 was thus briefly but adequately described by the author:

- 1951: Found infected were four big gerbils, one midday gerbil, one water-rat and three fleas of the species Nosopsyllus laeviceps.
- 1956: Isolated were 36 cultures from big gerbils and 27 from unidentified fleas.
- 1957: Obtained were 130 cultures (ninety-one from big gerbils, four from midday gerbils, fourteen from X. skrjabini, three from N. laeviceps and eighteen from unidentified fleas).
- 1958: Epizootic among the mice in the lowlands of the Ural River* (236 cultures isolated). In another Uchastok of the interfluvial area 23 cultures were isolated from big gerbils and 52 from X. skrjabini.
- 1959: The mouse epizootic terminated in spring. In the other parts of the region only big gerbils and their fleas were found to be affected in 12 "points."
- 1960: Fairly intensive but localized epizootic in the eastern part of the interfluvial area in localities not dealt with during the 1958-59 anti-rodent campaigns.
- 1961: Affected were 59 localities in the central part of the area.
- 1962: 107 localities were affected and 222 plague cultures were isolated. The epizootic spread to the north of the area which had been free from the infection for a prolonged time.

* This outbreak has been fully described in Report I of the Plague Review in the Soviet Union.

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1963: Intensive outbreak in the course of which 214 cultures were isolated from wild rodents and their fleas in 134 localities. Most affected were the areas involved in 1958-1959 epizootic among the mice. The exacerbation of plague in 1962 and 1963 was probably due to the stoppage or low efficacy of the anti-rodent campaigns.

The author felt convinced that, though no evidence was available for the years from 1952 to 1955, plague had continued to be perennially present in the interfluvial area from 1951 onwards. Though other rodent species had been found involved, occasionally, the big gerbils functioned as the reservoir of the infection with X. skrjabini as the principal vector.

- 11) Postnikov, G. B. and Rotschild, E. V. (Gur'ev): The relation of the plague epizootic in the Ural-Emba interfluvial area to the landscape. Pp. 209-211.

This ecological study can be quoted by title only.

- 12) Sarzhinskii, V. A. (Panfilov): Materials to the epizootiology of plague in the Sailyugem Mountain range. Pp. 229-230.

The existence of plague in the Sailyugem range which, forming part of the Altai mountains, is situated on the Soviet-Mongolian border, was first proved in 1953 on the Mongolian side of the range, but also became manifested on the Soviet side in 1961.

From 1953 to 1962 ninety plague cultures were isolated in this focus, only thirteen of which were obtained on the Soviet side. Positive findings were made in the Altai marmots, the long-tailed susliks, the Mongolian and Daurian rat-hares, Alticola strelzovi, Dzhungarian hamsters and polecats as well as in fleas of numerous species.

In 1963 the Mongolian plague workers detected the presence of an epizootic among marmots, susliks and Mongolian rat-hares in the vicinity of Lake Khaknur near the international border.

The author noted that 71% of all plague cultures obtained in the focus were isolated from Mongolian rat-hares and their fleas and stressed that, as observed for instance in 1963, manifestations of the disease in these animals could

continue at the time of hibernation of the marmots and susliks. It also deserved attention that while the fleas collected from marmot and suslik burrows yielded no plague cultures, such collected from the burrows of the Mongolian rat-hares were apt to prove positive.

In the opinion of the author the polecats and other mammalian predators played an important role in importing the infection from Mongolia into the Soviet part of the focus.

- 13) Finenko, F. D. et al. (Alma-Ata): Some peculiarities of the course of plague epizootics in the Zachuiskaia Saksaulova Dacha. Pp. 273-274.

The authors render a report on the plague situation in an area near the Chu River in the Central-Asian plain focus for the period from 1950 to 1964. Examinations of large numbers of rodents (almost exclusively big gerbils) and their ectoparasites led to the detection of 118 plague strains from the former (97.5% from Rh. opimus) and 166 cultures from ectoparasites (97% from fleas). Recently the perennially occurring epizootics involved a territory of 100,000 ha (as against 40-60 thousand ha early in the observation period), reaching the floodlands of the Chu River. Characteristic for the outbreak taking place in the spring of 1964 was the frequency of the infection in the fleas as compared to that in the rodents which yielded only 7% of the plague cultures isolated at the time.

- 14) Shamanek, P. I. et al. (Gur'ev): The North-West Ust'-Urt Basin-- a fundamental plague focus in the North-West Ust'-Urt. Pp. 287-289.

Regular surveys of the plague situation in the Ust-Urt, a desert plateau in the Gur'ev Oblast of the Kazakh SSR and the Kara-Kalpak ASSR between the Caspian and Aral seas were started in 1961, since, when up to and including the year 1964, perennial epizootics were observed in the Ust-Urt Basin. Though the presence of the infection was also proved in other gerbil species, Rh. opimus was the fundamental plague reservoir.

- 15) Shamanek, P. I. et al. (Gur-ev): The valleys of the south-eastern part of the Mangyshlak Peninsula as sites for the survival of the rodents. Pp. 289-291.

As can be gathered from this ecological study, the usually slowly progressing plague epizootics in the south-eastern part of the Mangyshlak Peninsula may become exacerbated whenever

(a) the population density of the big gerbils and the frequency of their fleas become increased; (b) facultative carriers of the infection like Meriones erythraeus and Citellus fulvus become frequent and (c) the environmental conditions for the rodent herds become unfavorable. Such exacerbations of the plague situation were observed in 1947, in 1955, and in 1964.

The principal vectors of plague in the area dealt with by the authors were the big gerbils fleas Xenopsylla skrjabini and X. nuttalli, the 43rd degree of latitude forming in general the dividing line between the zones of occurrence of these two species.

- 16) Arkhangel'skaia, N. P. and Zhuravleva, V. I. (Alma-Ata): A contribution to the problem of the comparative study of the interrelation of P. pestis with tissue cultures. Pp. 18-19.

The contents of this note do not lend themselves to the purpose of a brief review.

- 17) Varivodina, T. A. (Frunze): Observations on the plague strains isolated during different epizootics in the Central-Asian mountain focus. Pp. 63-64.

Examining in 1964 four plague strains freshly isolated and sixty-nine subcultures, the author came to the conclusion that, particularly, in the case of less intensive epizootics, the plague bacilli in the marmots and the fleas undergo dissociation.

- 18) Volokhov, A. A. (Alma-Ata): Observations on the improvement of the bacteriological diagnosis of plague. Pp. 64-66.

In order to study possibilities for an acceleration of the laboratory diagnosis of plague, the author (a) subcutaneously injected guinea-pigs with small numbers of plague bacilli suspended in an egg-yolk solution and (b) after twelve, twenty-four and forty-eight hours took material for examination from the exudate at the site of injection for cultivation on agar plates. Results obtained with this mode of infection and of control tests without egg-yolk gave the following results:

<u>No. of Animals</u>	<u>Infecting Dose (No. of Organisms)</u>	<u>Percentage of Positive Cultures from Material Taken After Hours</u>			<u>Suc- cumbed</u>	<u>Sur- vived*</u>
		<u>12</u>	<u>24</u>	<u>48</u>		
<u>With egg-yolk</u>						
8	5	25	50	62.5	5	3
8	10	75	100	100	7	1
<u>Without egg-yolk</u>						
6	5	-	-	-	2	4
6	10	-	-	-	4	2

* These animals, when sacrificed 17 days after infection, showed no evidence of plague.

Considering these results, the author recommended the use of egg-yolk suspensions for the examination of materials from plague-suspect rodents.

- 19) Grelenchuk, A. I. et al. (Chelkar): Isolation of glycerol-negative plague cultures in the region north of the Aral Sea. Page 72.

As described in this note, the authors isolated from fleas of the species X. skrjabini two plague strains which failed to acidify glycerol-containing media both immediately after isolation and after storage for one year. Both strains were weakly virulent for guinea-pigs and white mice.

- 20) Danilova, K. IA. et al. (Tashkent): Characterization of the plague strains isolated in the Kyzyl-Kums from 1961 to 1964. Pp. 80-81.

The 400 strains examined by the authors showed mostly a quite typical behavior. The all acidified glycerol-containing media within 1-3 days. Nine out of 373 of the strains produced late acidification in rhamnose-containing media. All strains proved to be virulent, partly even highly virulent.

- 21) Ermilov, A. P. et al. (Gur'ev; Alma-Ata): Nutritional requirements of the plague bacilli isolated in the Ural-Volga interfluvial area and the regions north-east and east of the Caspian Sea. Pp. 99-100.

The contents of this note cannot be briefly reviewed.

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- 22) Zaitsev, V. A. and Gladkov, P. E. (Chimkent): A contribution to the methodology of examination of rodents for the presence of plague. Pp. 104-105.

Making comparative tests with the organs of plague-affected rodents the authors found that in some instances, in which cultivation on agar and animal experiments failed, cultivation in broth containing gentian-violet (1:100,000) gave positive results.

- 23) Kudinova, T. P. (Alma-Ata): Observations on the properties of the atypical plague strains isolated in the Balkhash Raion in 1963. Report I. Cultural, morphological, biochemical and immunogenic properties, and virulence of the strains. Pp. 128-129.

Summarizing the results of her investigations, the author stated that

"in the autumn of 1963 in some of the Uchastki of the Ili-Karatal interfluvial area plague strains were isolated which were typical in regard to their cultural-morphological, biochemical and other properties, but avirulent for white mice and guinea-pigs. The majority of these strains proved in preliminary tests highly immunogenic for guinea-pigs."

- 24) Kudinova, T. P. and Kunitsa, N. K. (Alma-Ata; Bakanas): Observations on the properties of the atypical plague strains isolated in the Balkhash Raion in autumn 1963. Report II. Virulence for wild rodents. Pp. 130-131.

The authors found that the drop in the virulence of P. pestis, taking place during the decline of the epizootics, became manifested in the various rodent species involved in an unidentical manner. Virulent strains persisted longest in the species forming the fundamental reservoir of the infection.

- 25) Kudinova, T. P. (Alma-Ata): Observations on the properties of the atypical plague strains isolated in the Balkhash Raion in 1963. Pp. 131-132.

The author of this note, the details of which must be studied in the original or in a translation, came to the conclusion that

"the marked lowering of the virulence in the strains isolated and studied by us is not explained by a heterogenicity of their cell composition but by a change of the virulence of the whole population. Probably this process is related with some change in the antigenic structure of the strains."

- 26) Martinevskii, I. L. (Alma-Ata): The taxonomy of the genus *Yersinia*. Report I. Remarks on the systematic position of the plague bacillus. Pp. 142-144.

The author is in favor of classifying *P. pestis* and the species related to it in a separate genus *Yersinia*.

- 27) Martinevskii, I. L. (Alma-Ata): Taxonomy of the genus *Yersinia*. Report II. Numerical taxonomy of the genus *Yersinia*. Pp. 144-146.

Evaluating 43 properties of the 190 strains examined by him, the author was able to divide them into three groups, the first of which was formed by the typical virulent plague bacilli isolated in Central Asia, China, India and Africa.

- 28) Martinevskii, I. L. (Alma-Ata): Taxonomy of the genus *Yersinia*. Report III. Observations on the taxonomic groups of the genus *Yersinia*, their nomenclature on possible type strains. Pp. 146-148.

This article cannot be briefly reviewed.

- 29) Martinevskii, I. L. (Alma-Ata): A contribution to the problem of auxotrophic and hypotrophic variants of *P. pestis*. Pp. 149-151.

This study on auxotrophic and "hypotrophic" variants of *P. pestis* (i.e., strains with lowered nutritional requirements) can be mentioned by title only.

- 30) Osadchaia, L. M. et al. (Alma-Ata; Bakanas): Isolation of atypical plague strains in the Ili-Karatal interfluvial area. Pp. 181-182.

The authors found that 75% of the 206 plague strains isolated during the period from 1963 to 1964 in the Ili-Karatal interfluvial area were avirulent or weakly virulent. Twenty-seven of the avirulent strains acidified sorbitol-containing media only after five days. The author added that

"A study of the strains on the medium of Higuchi-Smith showed that in 51% their cell content was not uniform. We postulate that this renders it possible to explain the continuation of the epizootics, notwithstanding, the isolation of a large number of strains with an attenuated virulence or no virulence. If such strains enter the body of animals, the avirulent organisms are eliminated and the virulent organisms settle down and produce a prolonged infectious process which under certain circumstances can become complicated by a sepsis."

- 31) Poluliakh, P. A. (Frunze): A contribution to the problem of the nitrifying and denitrifying properties of the plague strains isolated in the Central-Asian mountain focus. Page 198.

Examining 311 plague strains isolated during the last fourteen years in the Central-Asian mountain focus, the author found that all these cultures were endowed with stable denitrifying and with inconstant nitrifying properties.

- 32) Stolchenova, N. A. and Ostrovskaya, N. M. (Nukus): Isolation of glycerol-negative plague strains in the northern sandy raion of the Kyzyl-Kums and in the Kara-Kalpak Ust'-Urt. Pp. 252-253.

The author found during the period from 1960 to 1963 in the Kyzyl-Kums and in the Ust'-Urt (a) one strain isolated from a big gerbil which proved permanently incapable of acidifying glycerol-containing media; and (b) four strains which initially and temporarily did not acidify such media or produced their late acidification. The latter four strains were virulent, while the permanently glycerol-negative strains were avirulent for white mice and guinea-pigs and non-immunogenic.

- 33) Tkachenko, V. V. (Alma-Ata): Hemolytic activity of the plague bacillus in blood-containing media. Pp. 255-256.

Examining 295 plague strains, the author found that 168 of them showed a hemolytic activity when incubated at 37°C and 166 at 28°C. The former temperature was more favorable for a rapid demonstration of the hemolytic properties. Glycerol-positive strains showed a somewhat more marked hemolytic activity than glycerol-negative strains.

- 34) Khirusselevskaya, N. M. and Bibikova, V. A. (Alma-Ata): Considerations of the possible importance of the weakly virulent plague strains for the natural focality of plague. Pp. 274-276.

As stated by the authors, Pokrovskaja (1934) was capable of producing in a guinea-pig kept on a vitamin-free diet a bacteremia with the vaccinal plague strain AMP. Afterwards many workers produced in animals a bacteremia through the simultaneous administration of avirulent and vaccinal strains and of cortisone, egg-yolk, iron, etc.

Semiotrochev (1961) obtained the same result when administering the vaccinal plague strains 1-17 to pregnant tamarisk gerbils and an analogous result was obtained by the present author and her associates when administering the avirulent plague strain 610-A to pregnant guinea-pigs.

That fleas are capable of transmitting avirulent plague bacilli to healthy animals was first shown by Suemoto and his colleagues (1956). Khrustselevskaja and her associates (1963), Khrustselevskaja and Bibikova (1965 - see infra) obtained analogous results with X. cheopis and X. gerbilli. Afterwards Funkskii and others (1964), Golkovskii and his co-workers (1964) had the same success when working with the EV and naturally attenuated plague strains. The present author and her colleagues (1963) could enhance the virulence of an avirulent subculture of the strain 610-A by passing it through X. cheopis, X. gerbilli and pregnant guinea-pigs and the same result was obtained by Bibikova and Khrustselevskaja (1965) with two weakly virulent plague cultures.

To explain these findings, Khrustselevskaja and Bibikova declared that

"The presence of the causative organisms in the body of little active vectors under unfavorable conditions leads to an increased multiplication of the avirulent organisms and the elimination of the virulent forms. As a result the herd virulence of the strain becomes lowered. In the body of active vectors under most favorable environmental conditions and nutrition on the contrary it comes to a selection of the virulent plague bacilli and this leads to a marked increase of the herd virulence of the organisms."

- 35) Bibikova, V. A. and Khrustselevskaja, N. M. (Alma-Ata): One of the directions for the study of fleas and P. pestis. Pp. 33-34.

As described in this note, the authors used two plague strains to infect fleas of the species X. cheopis and X.

gerbilli. The first of these, isolated from experimentally infected Ctenophthalmus dolichus, was avirulent for guinea-pigs in 5 billion doses and, administered in 1 million doses to white mice, killed only a part of the animals without causing a bacteremia. When X. cheopis infected with this strain were exposed on ten white mice, six of the animals succumbed to the infection, only one showing a bacteremia. The subculture isolated from the fleas was virulent for susceptible animals and did not grow on the medium of Higuchi-Smith at 37°C.

The second strain, isolated from a lot of X. gerbilli, had a DCL for white mice of 100,000 organisms, of 1 billion for guinea-pigs. With this strain 125 X. gerbilli were infected from which in the course of a month 103 subcultures were obtained. The subcultures which had been obtained 5-21 days after the infection of the fleas were lethal for white mice in doses of 100 organisms within 6.4-8.2 days. Subcultures obtained from the fleas 22-29 days after infection killed the mice already within 5.4-6.6 days. Subcultures kept in the fleas for longer periods killed forty-four out of sixty-six white mice in doses of 10 organisms on the 7th-8th day.

Thus, the authors summarized, fleas which had been infected with weakly virulent plague strains, became after some time capable of infecting animals through their bite, producing an acute infection.

- 36) Khrustselevskaia, N. M. et al. (Alma-Ata): Use of the medium of Higuchi and Smith for a study of the cell composition of populations of P. pestis differing in their virulence. Pp. 276-277.

The authors studied the possibility of restoring the virulence of attenuated plague strains through the selection of virulent organisms obtained with the aid of passage through fleas. Searching for suitable strains for these studies, they found one culture (No. 687) which besides a majority of avirulent organisms containing single virulent forms. Cultivation of this strain on the medium of Higuchi-Smith at 37°C yielded 28 colonies, that on Hottinger's agar 20 colonies. After further cultivation at 28°C for twenty-four hours 3 more colonies grew which, in contrast to those developing at 37°C, proved to be virulent.

The plague strain in question was used for the infection of X. gerbilli. Thirty-five subcultures obtained

from these fleas were cultivated on the medium of Higuchi-Smith and on Hottinger's agar. Twenty of the subcultures, obtained from the fleas more than twenty days after infection did not grow on the media at 37°C. The other fifteen subcultures, made less than twenty days after infection of the fleas, gave scant growth (1-6 colonies).

"Thus," the authors stated, "the character of the growth at 37°C and the results of virulence tests in white mice indicate a comparative increase of virulent organisms in the strain 687 after its passage through X. gerbilli."

- 37) Shmuter, M. F. and Kudinova, T. P. (Alma-Ata): Observations on the action of calcium chloride on the growth of P. pestis. Pp. 306-308.

The general conclusion reached by the authors of this article, the details of which must be studied in the original or in a translation, was that the concentration of calcium ions is of great importance for the growth of virulent and vaccinal plague strains at temperatures above 28°C.

- 38) Shabaev, N. IA. and Matveeva, O. G. (Tashkent): Observations on the persistence of P. pestis in the carcasses of rodents at high temperatures. Pp. 285-286.

Evaluating their findings, the authors maintained that during the hot season it was indicated to use rodents caught alive for bacteriological and experimental investigations. In the case of rodents killed in the field, examinations of the bone-marrow were indispensable. In the case of white mice used for animal experiments, examinations of their brain were suitable.

- 39) Burdo, L. N. (Alma-Ata): Course of plague infection in the case of a repeated infection of guinea-pigs through the mucosa of the eye and the oral cavity. Pp. 50-51.

The author summarized that repeated plague infection of guinea-pigs through the mucosae of the eye or the oral cavity led to a specific sensitization of the animals which lasted for 20-30 days.

- 40) Burdo, L. N. and Lopatina, N. F. (Alma-Ata): Plague peritonitis in guinea-pigs infected subcutaneously. Pp. 51-52.

The authors reported that, dissecting a considerable number of guinea-pigs, they met with three instances of plague peritonitis with positive bacteriological findings. The groin lymph nodes of these animals were normal in aspect and contained no plague bacilli. The cause of the peritonitis was the presence of a destructive process in the para-aortic lymph nodes, in the pus of which numerous plague bacilli were present.

The authors postulated that the peritoneal adhesions occasionally found at the autopsy of wild rodents might be residues of a past inflammation of the peritoneum.

- 41) Burdo, L. N. and Sosunova, A. N. (Alma-Ata): Experimental observations on mixed infections. Plague and tuberculosis. Pp. 52-53.

The authors of this note, the details of which must be studied in the text, found that tuberculosis-affected guinea-pigs showed a markedly lowered reactivity of infection with P. pestis.

- 42) Eremitiskii, N. IA. and Eremitaskaia, N. A. (Saratov): Observations on the sensitivity of the big gerbils to plague, in the region north of the Aral Sea. Pp. 98-99.

As the authors found the susceptibility of big gerbils, obtained from geographically distant localities, to plague showed no marked differences. Apparently the resistance of these animals to plague developing in the course of the epizootics was not of a long duration.

- 43) Lavrent'ev, A. F. (Uralsk): Experimental plague in four species of voles of the Tian-Shan and the Pamir-Alai. Pp. 138-139.

Judging from his findings the author considered it as possible that the voles, particularly Alticola strelzovi, became temporarily involved in the marmot epizootics and thus contributed to the circulation and preservation of P. pestis.

- 44) Egorova, R. P. (Alma-Ata): Observations on the role of the specific sensitization in the appearance and the course of the infectious process in plague. Pp. 94-95.

In order to decide whether subcutaneous infection of guinea-pigs with virulent plague bacilli repeated after an

interval of five days leads to an increase sensitization of the animals, the author made two series of tests:

- (a) 131 guinea-pigs were twice injected with doses of 10-25 organisms of a virulent plague strain; and
- (b) 64 guinea-pigs were twice injected with doses of 100-100,000 organisms.

It was found that

"after twice repeated infection of guinea-pigs with a virulent plague strain after an interval of five days one could observe a considerably increased intensity of the infectious process manifested by a shortening of the length of life of the animals and also the more severe affection of the tissues at the site of infection and in the regional lymph nodes. Such severe affections are met with 2.5-4 times more frequently than in animals infected once with the same doses. The shortening of the average lifespan of the twice infected animals in comparison with that of the controls is more clearly marked in the guinea-pigs infected with small doses of virulent plague bacilli - 1 DCL or less."

- 45) Egorova, R. P. et al. (Alma-Ata): Observations on the post-infectious immunity of guinea-pigs to plague. Pp. 95-97.

The authors of this article, the details of which do not lend themselves to the purpose of a brief review, found that both subcutaneous and flea-borne infections of guinea-pigs with virulent plague bacilli led to the appearance of a post-infectious immunity in the survivors.

- 46) Kartasheva, A. L. (Alma-Ata): The erythrocyte sedimentation reaction - an objective test for the evaluation of the reactogenicity of anti-plague vaccines. Page 115.

Comparative examinations of guinea-pigs vaccinated with the EV strain led the author to the conclusion that

"the erythrocyte sedimentation reaction, hand in hand with other indices, can be used as an objective test for an evaluation of the degree of the reactogenicity of the vaccinal plague strains."

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- 47) Krasikova, M. A. et al. (Alma-Ata): Repeated use of agar media for the cultivation of the vaccinal plague strains without regeneration. Pp. 124-126.

The authors found it legitimate to harvest live plague vaccines twice from the same media simply by pouring after the collection of the first lot 5-8 ml of sterile normal saline or preferably a corresponding amount of phosphate buffer into the flasks used for vaccine manufacture and to incubate the latter for two days at 28°C.

- 48) Leshkovich, L. I. (Alma-Ata): Contemporary problems of immunology. Pp. 139-141.

This general discussion can be quoted by title only.

- 49) Men'shov, P. I. (Alma-Ata): Remarks on some technical conditions for the preparation of the vehicle for drying the live anti-plague vaccine. Pp. 154-155.

The medium ordinarily used for drying the live plague vaccine contains 40% saccharose and 6% gelatine in distilled water; it is autoclaved for twenty minutes at 120°C. In order to avoid the frequent decoloration and sediment formation following this method the author recommended the following procedure:

The saccharose and gelatine are added to distilled water previously heated to 80°C and the mixture is boiled for ten minutes. Then it is filtered through 2-3 layers of gauze and sterilized at 105°C-120°C in an autoclave previously heated for one and half hour.

- 50) Shunaev, V. V. et al. (Alma-Ata; Moscow): Immunogenicity of vaccines dried in a medium with polyvinyl-pyrrolidone. Pp. 308-309.

As stated in this brief note, a lot of live anti-plague vaccine dried with the aid of polyvinyl-pyrrolidone medium proved considerably more immunogenic than a lot dried according to the hitherto accepted method in a gelatine-saccharose vehicle.

- 51) Mochalina, E. N. (Alma-Ata): A study of the antigens of plague and pseudotuberculosis strains with the aid of the agar precipitation method. Pp. 165-166.

- 52) Mochalina, E. N. (Alma-Ata): Contributions to the problem of allergic skin reactions in nonimmune guinea-pigs. Pp. 167-168.

These two article can be quoted by title only.

- 52) Mikhailidi, A. F. et al. (Aralsk and Moscow Govt. University): Observations on the presence of plague hemagglutinins in camels of the Pre-Aral Kara-Kums. Pp. 155-156.

As described in this note, hemagglutination tests in camels gave during the period from 1963 to 1964 occasional positive results in localities where at the time no plague epizootics were present. Examinations of the blood of the animals proved invariably negative.

- 54) Peisakhis, L. A. et al. (Alma-Ata; Taldy-Kurgan): Hemagglutinins and reactivity of big gerbils in contact with plague bacilli of different virulence, reactogenicity and immunogenicity. Pp. 187-189.

Experimental observations on 180 big gerbils caught in an area free from epizootics led the authors to the following conclusions:

"(a) After a primary contact of the animals with plague strains differing in their virulence, immunogenicity and reactogenicity, the time of appearance of the hemagglutinins, the dynamics of the antibodies, the percentage of their presence and their titers are different. These indices are most marked after primary infection of the animals with a highly virulent strain or a weakly virulent strain with good immunogenic properties and a comparatively high reactogenicity.

(b) A repeated contact of the gerbils with a massive dose of a virulent plague strain leads invariably to the production of antibodies with very high titers. This peculiarity is most marked in gerbils, the initial infection of which was caused with highly virulent strains or weakly virulent strains with a high immunogenicity and reactogenicity.

(c) The survival rate of the big gerbils after their repeated infection with massive doses of virulent plague strains and the indices of the

hemagglutination reaction is directly related to the virulence and immunogenicity of the strains used for the initial infection.

(d) Even in comparatively plague-resistant animals like the big gerbils the post-vaccinal immunity is marked. The efficacy of the latter and the indices of hemagglutination were highest in the case of the strain 774 (a vaccinal strain with a minimal immunizing dose for guinea-pigs of 500 organisms), next high in that of the strain 780 (minimal immunizing dose for guinea-pigs 100 organisms) and lowest in the case of the EV strain.

(e) In all groups under test after the repeated infection with highly virulent strains single animals succumbed to septicemic plague, showing high hemagglutination titers in their blood. In a whole series of cases animals in which after initial contact with various plague strains no hemagglutinins were found, survived after repeated infection with a large dose of plague bacilli. This shows that the hemagglutinins found in the big gerbils after contact with P. pestis can hardly be used for an assessment of the degree of immunity. The passive hemagglutination test ought to be used in the first line for a study of epizootiological and epidemiological problems, inasmuch as the presence of hemagglutinins testifies to a contact of the micro-organism with P. pestis, and the titers of the reaction permit to assess the time of such contact."

- 55) Peisakhis, L. A. et al. (Alma-Ata; Taldy-Kurgan): Dynamics of the hemagglutinins in the big gerbils after an initial contact with P. pestis and subsequent contact with non-specific micro-organisms. Pp. 189-191.

The authors had previously established that in big gerbils previously infected with even small doses of P. pestis a repeated contact with this organism leads to an hyperergic reaction with very high titers. The problem interesting them at present was whether other infectious agents were capable of producing antibodies specific for plague in animals previously in contact with the latter infection. For this purpose a part

of gerbils caught in a plague-free zone was subcutaneously infected with 1,000 organisms of a highly virulent plague strain (DCL for guinea-pigs 50-100 organisms) while a second group served as controls.

Then during six months blood samples were regularly taken from the caudal vein, at first every five and then every ten days. After six months groups of 27-28 animals were infected respectively with (a) 1,000 organisms of the above plague strain; (b) a pseudotuberculosis strain and (c) a pasteurellosis strain. The animals were then further observed for a period of ninety-five days during which the systematic collection of blood samples was continued. Reporting upon the examination of the latter, the authors stated that

"in all three groups one began to find animals with plague-specific hemagglutinins. The increase number of the positively reacting animals was higher in the groups repeatedly infected with plague and pseudotuberculosis bacilli, less in the case of pasteurellosis. However, the highest amount of antibodies was recorded after super-infection with pseudotuberculosis bacilli."

The length of the response to the repeated administration of the organisms in question was also different, the persistence of the antibodies being longest in the case of plague (50 days) as against forty days in the case of pseudotuberculosis and only ten days in the case of pasteurellosis.

In the control group a much smaller number of animals reacted positively to the administration of the organisms. The dynamics of hemagglutination in this group were typical for animals coming in contact with P. pestis for the first time.

Commenting upon these observations, the authors stated that inasmuch as pseudotuberculosis was rare in the Central-Asian desert plague focus, never appearing in the form of epizootics, a role of P. pseudotuberculosis in the production of specific antibodies could be ruled out. However, recent investigations (see Semiotrochev et al., infra) proved the circulation of pasteurelleae in the focus. Therefore, the authors concluded,

"one should not exclude the possibility of pasteurellosis epizootics, and it is indispensable to study this in localities where plague-specific antibodies are present in the big gerbils."

This should be done specially in instances in which a high percentage of the presence of antibodies is observed in the animals and P. pestis is not isolated. In such cases it is indicated to make supplementary bacteriological examinations for the presence of pasteurellosis."

- 56) Paisakhis, L. A. et al. (Alma-Ata; Chimkent): The passive hemagglutination test as one of the methods for the study of the natural focality of plague. Pp. 191-193.

As stated in this important note, the full contents of which must be studied in the original or in a translation, during a period of four years the authors made ample use of passive hemagglutination tests in various parts of the Central-Asian desert plague focus. They examined during this period over ten thousand sera collected from big gerbils in 228 localities and, making simultaneously bacteriological examinations of about 70,000 of these animals as well as of an enormous number of fleas, isolated hundreds of plague strains.

The authors confirmed

"that the passive hemagglutination reaction is highly specific and forms the most effective means of detecting the plague bacillus in nature. In our practice we met with no instance of the isolation of this organism from big gerbils without the simultaneous detection of specific hemagglutinins in the blood of the animals. At the same time, during all phases of the epizootics there are always far more gerbils giving a positive hemagglutination reaction than animals showing the features of plague."

It was not rarely possible to detect the specific antibodies 6-9 months after the detection of plague by bacteriological methods, thus having a possibility for a retrospective diagnosis of plague.

That the diagnostic value of the hemagglutination reaction is high, was proved by several instances quoted by the authors in which the positive outcome of the tests antedated the discovery of the infection with the aid of bacteriological examinations.

While recommending the large-scale use of the hemagglutination reaction, the authors stressed the necessity of a

careful instruction of the anti-plague detachments in its use and also that of making adequate arrangement for the preparation of the antigen in one of the anti-plague institutes.

- 57) Shmuter, M. F. et al. (Alma-Ata): Detection of plague among camels with the aid of the passive hemagglutination test. Page 305.

As noted by the authors, in the summer and autumn of 1964 an intensive plague epizootic, involving mainly the gerbils, took place in a raion of the mountainous part of the Mangyshlak Peninsula. Since a large number of camels was kept in the raion and one of these animals had succumbed to plague, it seemed important to ascertain to what extent this species was involved in the outbreak. Hemagglutination tests made for this purpose with sera of 33 camels gave positive results in 14 instances at titers ranging from 1:80 to 1:640. Control tests with 15 sera collected from camels in a plague-free oblast gave in one instance only a positive reaction at a titer of 1:40.

- 58) Bondarenko, M. F. (Dzhuzaly): Instances of the isolation of plague phages in the raion of an active plague epizootic. Page 35.

The author was able to demonstrate the presence of plague phages in the following materials collected during a 1964 epizootic in the Northern Kyzyl-Kums: (a) pooled organs of big gerbils; (b) emulsion of 327 fleas collected in burrows of these rodents; (c) emulsion of 413 fleas obtained in the same manner. These phages proved to be strictly specific and resistant to the action of chloroform, ether, gentian-violet and methylene-blue as well as to heating at 70°C. They were neutralized by specific anti-plague serum.

- 59) Bondarenko, M. F. (Dzhuzaly): Transmission of plague bacteriophages by fleas. Page 36.

It was not possible to transmit plague bacteriophages to big gerbils through bites of the flea X. gerbilli caspica. However, a transmission of the phages proved possible by the alimentary route (feeding of the gerbils with phage-infested fleas and hay).

- 60) Kruchinina, K. E. et al. (Alma-Ata): Activity and specificity of plague bacteriophages multiplied in different nutrient media. Pp. 126-127.

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- 67) Ermilov, A. P. and Zubova, M. V. (Gur'ev): A contribution to the problem of the action of some antibiotics on P. pestis. Pp. 101-102.

As stated in the introduction to this note, the aim of the authors was to study the simultaneous action of various combinations of streptomycin, monomycin and neomycin on the plague bacillus as well as the possibilities of an appearance of variants of the strains resistant to these antibiotics. Summarizing the findings they made in these respects, the authors stated that they had been unable to detect a considerable difference between the individual and the combined action of the three antibiotics. The appearance of monomycin- and neomycin-fast forms was observed in vitro, but was considerably less frequent than that of streptomycin-fast strains.

- 68) Pak, G. IU. (Alma-Ata): Observations on the phagocytic activity of the leucocytes of guinea-pigs treated with minimal doses of streptomycin. Pp. 185-187.

Studying the influence of minimal streptomycin doses on the process of phagocytosis in guinea-pigs, the authors found

"that in the body of immune and nonimmune guinea-pigs intraperitoneally infected with the avirulent EV strain during the first stage of phagocytosis a neutrophile reaction is preponderant, which is replaced afterwards by a mononuclear macrophagic reaction. The phase of the neutrophile exudation is brief."

- 69) Semenova, E. L. (Alma-Ata): Efficacy of the combination of ecmolin with streptomycin in the treatment of experimental plague in guinea-pigs. Pp. 236-237.

In the experience of the author the combined administration of ecmolin and streptomycin considerably enhanced the therapeutic efficacy of the latter antibiotic.

- 70) Shapira, I. L. and Shatalov, V. L. (Panfilov): Observations on the pathological action of bicillin-3 on guinea-pigs. Pp. 291-292.

The authors found that the administration of bicillin-3 to guinea-pigs in doses corresponding to 15,000 units per kg body weight led to a mass mortality among the animals. A repetition of the dose caused abortions.

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- 71) Klassovskii, L. N. (Alma-Ata): Observations on the adaptation of various pseudotuberculosis strains to streptomycin. Pp. 120-121.

This note can be quoted by title only.

- 72) Shashaev, M. A. (Alma-Ata): Observations on the possibility of isolating pseudotuberculosis strains in the Central-Asian plague foci. Pp. 300-301.

Though the big gerbils and the grey marmots are susceptible to infection with P. pseudotuberculosis, thus far this organism has never been isolated from them under natural conditions in the Central-Asian plague foci. However, the occurrence of pseudotuberculosis phages there has been detected by the author and some other workers. In view of these findings Shashaev postulates that pseudotuberculosis bacilli do circulate in the Central-Asian plague foci.

- 73) Bibikov, D. I. (Alma-Ata): The reserves of marmots in the mountains of Central Asia and the Kazakhstan and the prospects of their utilization. Pp. 29-31.

Considering the results of a census of the marmot populations in the mountains of Central Asia and the Kazakhstan the author of this article, the details of which must be studied in the text, recommended that the number of these rodents caught annually ought to be at least doubled, i.e., brought to 300-400 thousand animals per year.

- 74) Bondar, E. P. (Alma-Ata): The toxicity of some poisonous plants for rodents. Page 42.

The native plants studied by the author of this brief note were found useless for a destruction of rodents.

- 75) Naumov, N. P. et al. (Moscow; Alma-Ata and Aral'sk): Preliminary results of the sanitation of the Pre-Aral Kara-Kums. Pp. 176-178.

As described in this article, the details of which cannot be briefly reviewed, the successful anti-rodent campaigns in the Pre-Aral Kara-Kums were conducted in two stages. During the first of these periods, lasting from 1958 to 1963, main attention was paid to a general lowering of the rodent populations, while during the second stage additional work was done in the elementary foci of the infection and in localities where the rodents were concentrated.

- 76) Sarzhinskii, V. A. (Panfilov): Experience of rodent destruction with hot vapors of chloropicrin with the aid of a motorcar. Pp. 230-231.
- 77) Iakovlev, M. G. and Radchenko, A. G. (Alma-Ata; Gur'ev): Observations on the multiplication of gerbils after an artificial disturbance of their population density. Pp. 312-313.

These two articles can be quoted by title only.

- 78) Semiotrochev, V. L. et al. (Alma-Ata; Chimkent): An attack of pasteurellosis in the Chuisk Raion of the Dzhambul Oblast. Pp. 239-241.

The authors describe an attack of pasteurellosis in a woman who had contracted the infection when handling the carcasses of two hares for culinary purposes. The diagnosis of the disease was confirmed through bacteriological examination of the contents of a pustule found on the hand of the patient and of the bone-marrow of one of the hares. It was also possible to ascertain the presence of an epizootic among the hares living in the vicinity of the habitation of the patient. Besides from a hare shot, P. multocida could also be isolated from ticks of the species H. plumbeum.

- 79) Sharapkova, N. IA. et al. (Nukus): A contribution to the problem of the natural focality of pasteurellosis in the Karakalpak ASSR. Pp. 292-293.

As briefly described in this note, the authors were able to prove the focal existence of pasteurellosis in the Karakalpak ASSR through the isolation of 18 strains of P. multocida from rodents and ticks (H. detritum) examined during the period from 1961 to 1963.

- 80) Aikimbaev, M. A. (Alma-Ata): Experience on the liquidation of human tularemia in a natural focus of the foothill-brook type. Pp. 9-10.

Studies made by the author during the period from 1950 to 1952 proved the existence of a natural tularemia focus in the Gvardeisk Raion of the Alma-Ata Oblast. Water-rats formed the main reservoir of the infection, ixodes ticks functioned as vectors. The number of human attacks of the disease observed during the period from 1942 to 1951 amounted to 286. House-to-house anti-tularemia vaccinations carefully administered in 1952 to 9,392 persons living in the focus led to the disappearance of human attacks of the disease even though epizootics continued to occur.

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- 81) Aikimbaev, M. A. et al. (Alma-Ata): Role of the tick Rhipicephalus pumilio in the transmission and preservation of the tularemia bacillus. Experimental observations. Pp. 10-12.

As described in this note, laboratory observations proved a role of Rh. pumilio in the transmission and preservation of the tularemia bacillus.

- 82) Aikimbaev, M. A. and Tleugabylov, M. K. (Alma-Ata): Contributions to the problem of the natural focality, epidemiology and specific prophylaxis of tularemia in the East-Kazakhstan Oblast. Pp. 12-14.

As the result of a survey made in Eastern Kazakhstan in 1963, the authors came to the conclusion that

"For the prevention of human tularemia it is indispensable to intensify the administration of prophylactic vaccinations and the implementation of general sanitary measures in the oblast which at present are used to an insufficient degree."

- 83) Eremitiskii, N. IA. and Eremitaskaia, N. A. (Aralsk; Saratov): Observations on the natural focality of tularemia in the floodlands of the Syr-Darya. Page 97.

The authors of this brief note refer to the isolation of five tularemia cultures from ticks (Dermacentor daghestanicus and Hyalomma sp.) in the spring of 1963.

- 84) Koturga, L. N. et al. (Alma-Ata): Experimental observations on the sensitivity and susceptibility of the grey marmots to tularemia. Pathologo-morphological studies. Pp. 122-124.

Studying the morbid changes in grey marmots (Marmota baibacina) experimentally infected with tularemia, the authors found this species as susceptible to the disease as guinea-pigs.

- 85) Roshchin, V. V. (Alma-Ata): Characteristics of the tularemia cultures isolated in a focus of the TSelin Krai. Pp. 215-216.

As summarized by the author, an examination of seven tularemia strains isolated in the Kokchetav Oblast of the TSelin Krai proved their typical behavior and high virulence.

- 86) Roshchin, V. V. (Alma-Ata): Typefication of the natural tularemia focus in the Kokchetav Oblast of the TSelin Krai. Pp. 217-218.
- 87) Roshchin, V. V. (Alma-Ata): Isolation of tularemia cultures from the tick Hyperlaelaps amphibius Zach. Page 218.
- 88) Roshchin, V. V. (Alma-Ata): Factors conditioning the natural focality of tularemia in the Kokchetav Oblast of the TSelin Krai. Pp. 219-220.

These three articles can be quoted by title only.

- 89) Tleugabylov, M. K. and Stogov, I. I. (Alma-Ata): Observations on a tularemia epizootic in the musk-rat breeding grounds of the Ala-Kul' animal-breeding establishment. Pp. 256-257.

This article deals with recently observed serious tularemia manifestations among musk-rats bred for the sake of their fur. It is noteworthy that the appearance of the disease among the staff members of the breeding establishment could be prevented through systematic anti-tularemia vaccination.

- 90) Finenko, F. D. et al. (Alma-Ata; Kazalinsk; Chimkent): Observations on tularemia manifestations in the Kazalinsk Raion of the Kyzyl-Orda Oblast. Page 272.

As described in this note, the presence of tularemia among the musk-rats in a raion of the Syr-Darya Delta led to the appearance of the bubonic form of the disease in man, the number of attacks observed in 1957 and 1958 amounted to thirty-two.

- 91) Badaker, S. IA. (Alma-Ata): Use of the concentrated anti-anthrax vaccine STI for the immunization of man. Pp. 22-24.

Observations on 2,000 persons described in this article led the author to the conclusion that the concentrated anti-anthrax vaccine STI was suitable for the cutaneous inoculation of man.

- 92) Semiotrochev, V. L. (Alma-Ata): The skin reaction and the immuno-biological transformation in persons immunized with the concentrated STI vaccine. Pp. 238-239.

Making comparative tests, the author found the concentrated STI vaccine more immunogenic than the usual unconcentrated vaccine.

- 93) Kondrat'eva, O. V. et al. (Alma-Ata): Use of a heating test for the differentiation of the vaccinal and the infectious titers of the agglutination reaction in brucellosis. Pp. 121-122.

This note reads as follows:

"For a differentiation of the infectious titers of the (agglutination) reaction from the vaccinal titers we used the heating test according to Hein (1962). Tested were the blood sera of 100 patients with chronic brucellosis and 150 sera of persons immunized with Br. abortus 19 vaccine. The latter sera were examined eight, ten or twelve months after the immunization.

The agglutination reaction was performed according to the usual method of Wright and at the same time with heated sera. All the 100 sera of the patients gave a positive reaction with Wright's method at titers from 1:20 to 1:800. After heating of these sera the agglutination reaction was positive in 75%, in the majority of the cases at somewhat lower titers.

In the case of the 150 sera of the vaccinated persons which in Wright's tests showed titers of 1:25 to 1:100, after heating the agglutination reaction was negative in 138 instances (92%). In the case of the twelve persons in whom the agglutination reaction remained positive, it could be established that three of them had formerly suffered from brucellosis.

In order to obtain an experimental confirmation, we infected thirty guinea-pigs with 100 organisms of a virulent Br. melitensis culture. A month later the sera of these animals gave a positive reaction both with the usual method and after heating.

An examination of the blood sera of guinea-pigs immunized with the vaccinal strain Br. abortus 19 showed that after heating the agglutination reaction became negative."

- 94) Pinigin, A. F. (Irkutsk): Brucellosis in yaks. Pp. 195-196.

As briefly described in this article, the author was able to confirm the presence of brucellosis in yaks in the Gornii Altai and Tuva republics, and also in the Mongolian People's Republic and in the Buriat ASSR.

- 95) Uzbekova, B. R. et al. (Alma-Ata; Chimkent): A contribution to the problem of the epidemiology of brucellosis in the Chimkent Oblast. Page 266.

According to this note a total of sixty-five persons was found to have suffered from brucellosis in the Turkestansk Raion of the Chimkent Oblast during the period from January 1962 to the end of May 1964. Invariably the presence of the disease in the sheep was responsible for the human infections.

Items quoted by title

- 96) Danilova, K. IA. and Kazido, M. Z. (Tashkent): Survival of the cholera vibrio on fresh and dried fruits. Pp. 78-79.
- 97) Danilova, K. IA. and Matveeva, O. G. (Tashkent): A rapid method of the bacteriological diagnosis of cholera in man. Pp. 81-83.
- 98) Stolchenova, N. A. (Tashkent): Water vibrios in the lower part of the Amu-Darya River. Pp. 250-252.
- 99) Burdelov, A. S. (Alma-Ata): Present views on the regional structure of the areale of P. pestis. Pp. 43-44.
- 100) Petrov, V. S. (Alma-Ata): Considerations on the biocenotic structure of the natural plague foci. Pp. 193-195.
- 101) Rivkus, IU. Z. and Rachinina, N. A. (Tashkent): Observations on possible localities for a long persistence of plague under the conditions of the monotonous landscape of the Griadovo-Iacheist sandy areas. Pp. 211-213.
- 102) Sviridov, G. G. (Alma-Ata): Preparation of a model of an elementary plague focus. Pp. 234-235.
- 103) Khrustselevskaia, V. P. (Alma-Ata): Epizootic contact in the natural plague foci and fundamental methods for its study. Pp. 278-280.
- 104) Akopian, M. M. and Krivonosov, K. I. (Nukus): Observations on the multiplication and behavior of the big gerbils. Pp. 14-15.

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- 105) Balabas, N. G. (Chimkent): Some data on the state of nutrition of the big gerbils in the Muyun-Kums. Pp. 24-25.
- 106) Balabas, N. G. et al. (Chimkent; Alma-Ata; Dzhambul): Structure of the burrows of the big gerbils in the north-eastern part of the Muyun-Kums. Pp. 25-27.
- 107) Burdelov, A. S. (Alma-Ata; Panfilov): Distribution of the big gerbils and structure of their populations in the Ili Depression. Pp. 48-49.
- 108) Bukhovtseva, N. A. and Fadeev, G. S. (Panfilov): Observations on the multiplication of the big gerbils in the Ili Depression. Pp. 54-55.
- 109) Varagushin, P. S. (Taldy-Kurgan): The big gerbils in the Liuk-Kums. Pp. 59-61.
- 110) Gvozdeva, L. P. (Alma-Ata): Vegetation in the habitations of the big gerbils in the Muyun-Kums. Pp. 68-70.
- 111) Gvozdeva, L. P. and Shatalov, M. S. (Alma-Ata; Taldy-Kurgan): Food reserves of the big gerbils in the various landscapes of the Sary-Ishi-Kotrau Desert. Pp. 70-71.
- 112) Danilenko, I. D. and Neruchev, V. V. (Gur'ev): Observations on the influence of the summer rains on the population density of the big gerbils in the region north-east of the Caspian Sea. Pp. 76-77.
- 113) Danilenko, I. D. and Neruchev, V. V. (Gur'ev): Observations on the settlement of big gerbils on the roadbed of the Makat-Shevchenko Railroad now under construction. Pp. 77-78.
- 114) Dubianskii, M. A. (Aral'sk): Types of the settlements of the big gerbils in the elementary plague foci in the Pre-Aral Kara-Kums. Pp. 87-89.
- 115) Il'inskaia, V. L. and Kuzin, I. P. (Alma-Ata): Observations on the humidity and temperature in the burrows of the big gerbils in the Muyun-Kums. Pp. 110-111.
- 116) Mokrousov, N. IA. (Alma-Ata): Distribution and population density of the big gerbils in the Pre-Ili Tau-Kums. Pp. 156-157.
- 117) Mokrousov, N. IA. et al. (Alma-Ata; Tashkent; Gur'ev): Comparative characterization of the multiplication of the big gerbils in the different parts of their areale. Pp. 157-159.

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- 118) Mukhamed'iarova, N. A. (Chimkent): Peculiarities of the mobility of the big gerbils in the Muyun-Kums. Pp. 169-171.
- 119) Naiden, P. E. et al. (Tashkent): Long-term oscillations of the population density of the big gerbils in the Kyzyl-Kums. Pp. 174-175.
- 120) Naumov, N. P. and Lobachev, V. S. (From the Moscow Government University): Structure of the population and mobility of the big gerbils. Pp. 178-181.
- 121) Pcslavskii, A. N. et al. (Alma-Ata; Tashkent): Observations on the big gerbils on the north-western border of their aereale. Pp. 204-206.
- 122) Rotschil'd, E. V. and Postnikov, G. B. (Gur'ev): Distribution of the big gerbils in the Ural-Irda interfluvial area. Pp. 213-215.
- 123) Salamov, N. A. et al., Observations on the northern frontier of the distribution of the big gerbils in the Bet-Pak-Dala. Pp. 226-227.
- 124) Khrustselevskii, V. P. et al. (Alma-Ata; Chimkent): Observations on the structure of the family districts of the big gerbils in the Muyun-Kums. Pp. 280-282.
- 125) Chernonog, N. F. and Mokrousov, N. IA. (Chimkent; Alma-Ata): Changes in the frequency of the big gerbils in the central part of the Muyun-Kums. Pp. 284-285.
- 126) Sharets, A. S. et al. (Chimkent): Dynamics of the multiplication of the big gerbils in the Muyun-Kums. Pp. 293-294.
- 127) Pavlov, A. N. (Gur'ev): Some ecological peculiarities of M. meridianus in the region north-west of the Caspian Sea and the Volga-Ural sandy areas. Pp. 182-184.
- 128) Sarzhinskii, V. A. (Panfilov): Signs of occupancy of the marmot burrows. Pp. 233-234.
- 129) Iakovlev, E. P. (Dushambe): Observations on the dislocation of the red marmots in the Pamir. Pp. 309-310.
- 130) Iakovlev, E. P. (Dushambe): Observations on the amounts of carbon dioxide and oxygen in the winter burrows of the red marmots in the Eastern Pamir. Page 311.

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- 131) Varagushin, P. S. (Taldy-Kurgan): Demarcation of the eastern frontier of the areale of Spermophilopsis leptodactylus in the region south of the Balkhash Lake. Pp. 61-62.
- 132) Varagushin, P. S. (Taldy-Kurgan): The median suslik in the Karatal-Aksai interfluvial area. Pp. 62-63.
- 133) Sarzhinskii, V. V. (Panfilov): Peculiarities of the motility of the rodents living jointly in the mountain-steppe zone of the South-East Altai. Pp. 232-233.
- 134) Sarzhinskii, V. V. (Panfilov): Materials for an ecological and epizootiological classification of the South-Eastern Altai. Pp. 227-228.
- 135) Tristan, D. F. (Chimkent): Contributions to the ecology of the yellow suslik in the Muynun-Kums. Report II. Nourishment of the yellow suslik. Pp. 258-259.
- 136) Tristan, D. F. (Chimkent): Contributions to the ecology of the yellow suslik. Report III. Mobility of the yellow suslik. Pp. 259-261.
- 137) Tristan, D. F. (Chimkent): Contributions to the ecology of the yellow suslik. Report IV. State of nutrition of the yellow suslik. Pp. 261-262.
- 138) Kapitonov, V. I. (Zoological Institute, Kazakh AS): Alticola strelzovi in the northern part of the Kazakh Plateau. Pp. 113-114.
- 139) Poslavskii, A. N. (Gur'ev; Chimkent): Recommendations for epizootiological observations of the birds in the region north of the Caspian Sea. Pp. 203-204.
- 140) Soldatkin, I. S. et al. (Saratov; Nukus): Contribution to the problem of the continuance of the plague epizootics in the Kyzyl-Kums. Pp. 246-248.
- 141) Shevchenko, K. L. et al. (Ural'sk): Observations on the contact of the rodents on the northern border of the Volga-Ural sandy areas. Pp. 302-304.
- 142) Bgytova, S. I. and Leonova, T. N. (Alma-Ata): Materials to the ecology of fleas. Report V. Critical temperatures in the development of the pre-imaginal phases of the fleas X. gerbilli minax. Pp. 28-29.

- 143) Bibikova, V. A. (Alma-Ata): Time limits of the metamorphosis of Ceratophyllus trispinus balkhaschensis Mik. 1958 under experimental conditions. Pp. 31-32.
- 144) Bykov, L. T. et al. (Chimkent): Contribution to the study of the fleas of the chat. Pp. 58-59.
- 145) Hauzshtain, D. M. et al. (Taldy-Kurgan; Alma-Ata): Observations on the appearance of the fleas of the big gerbil on the body of the host under natural conditions. Pp. 66-68.
- 146) Ibragimov, S. K. et al. (Tashkent): An apparatus for the individual examinations of fleas for plague. Pp. 109-110.
- 147) Kasatkin, B. M. and Kir'iakova, A. N. (Alma-Ata; Saratov): A contribution to the methodology of the collection of flea larvae under field conditions. Pp. 117-118.
- 148) Kafarskaia, D. G. et al. (Dushanbe): Observations on the ecology and geographical distribution of the fleas of the red marmot in the Eastern Pamir. Pp. 118-119.
- 149) Kunitskaia, N. T. (Alma-Ata): Species composition of the fleas of the Chingiztau mountain range. Pp. 133-134.
- 150) Kunitskaia, N. T. et al. (Alma-Ata; Taldy-Kurgan): Feeding activity of the fleas of the big gerbil. Experiments. Pp. 135-137.
- 151) Kunitskaia, N. T. et al. (Alma-Ata; Taldy-Kurgan): Observations on the multiplication of the fleas of the big gerbil. Pp. 137-138.
- 152) Maslennikova, Z. P. (Alma-Ata): Fleas of the Mangyshlak Peninsula. Pp. 151-152.
- 153) Maslennikova, Z. P. et al. (Alma-Ata): Fleas and ticks of the wild mammals in the area south of the Balkhash Lake. Pp. 152-154.
- 154) Mukhamed'iarova, N. A. et al. (Chimkent; Alma-Ata; Dzhambul): Experiences by sight estimations of the abundance of the fleas in the burrows of the big gerbils in the Muyun-Kums. Pp. 171-173.
- 155) Popova, A. S. and Sokolova, A. A. (Chimkent): Frequency of flea-infested big gerbil burrows in the Pre-Chuisk Muyun-Kums. Pp. 199-200.

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- 156) Poliakov, V. K. and Shevchenko, V. L. (Ural'sk): Observations on the distribution and frequency of Xenopsylla conformis on the northern frontier of the Volga-Ural sandy areas. Page 199.
- 157) Popova, A. S. and Sokolova, A. A. (Chimkent): Results of the approval of the methods of accounting for the frequency of fleas in the burrows of the big gerbils in the Pre-Chuisk Muyun-Kums. Page 201.
- 158) Popova, A. S. and Chernonog, N. F. (Chimkent): Adaptation of the fleas of the jerboas to the landscape of the Pre-Chuisk Muyun-Kums. Page 202.
- 159) Rudenchik, IU. V. et al. (Nukus; Saratov): Possibilities of a spread of plague epizootics by infected fleas in the colonies of the big gerbils in the Northern Kyzyl-Kums. Pp. 220-222.
- 160) Sabilaev, A. S. (Nukus): Fleas of the jerboas in the Karakalpak SSR. Pp. 222-224.
- 161) Stogov, I. I. et al. (Alma-Ata): Observations on the distance of the spread of the fleas of the big gerbils by the chat. Pp. 248-250.
- 162) Tabunina, T. I. and Poslavskii, A. N. (Gur'ev): Inter-species contacts of the big gerbils on the north-western frontier of their areale and peculiarities of the distribution of their fleas. Pp. 253-255.
- 163) Trofimenko, I. P. and Balabas, N. G. (Dzhambul; Chimkent): Frequency of the fleas in the burrows of the big gerbils in the north-eastern part of the Muyun-Kums. Pp. 263-265.
- 164) Fadeev, G. S. (Panfilov): A contribution to the study of the role of the chats in the spread of rodent fleas. Page 269.
- 165) Fedorova, V. N. (Dzhambul): Observations on the anatomy of the digestive tract of the fleas in the process of metamorphosis. Page 271.
- 166) Serzhanov, O. S. and Limanskii, N. P. (Nukus): A possible role of the ticks of the super-family Ixodoidea in the preservation of P. pestis in the Kyzyl-Kums. Pp. 243-244.
- 167) Serzhanov, O. S. et al. (Nukus): Ixodes ticks of the Karakalpak SSR as a possible reservoir of Q-fever in nature. Pp. 244-246.

262. Levi, M. I. and Momot, A. G., Serological investigations in plague. Report VIII. The antibody neutralization test. Sbornik naukh. rabot Elistinskoi protivochumnoi stantsii 2 (1961): 207-214.

The authors recently succeeded in sensitizing formalized erythrocytes with the capsular antigen of P. pestis. Such erythrocytes can be kept at 4°C or at room temperature for at least 3-4 months without losing their activity. The availability of such a stable product greatly simplified the method of passive hemagglutination which can be used now even in field laboratories. The method of preparing the formalized erythrocytes will be described in a separate publication. In the present paper a new serological reaction for plague work is dealt with - the antibody neutralization reaction. The meeting of the antibodies with the antigen leads to their combination, after which the erythrocytes, sensitized with the antigen do not become agglutinated, while without addition of the antigen the erythrocytes become agglutinated in the presence of the immune serum. The addition of the antigen to the immune serum neutralizes the antibodies in it and as a result the sensitized erythrocytes cease to become agglutinated.

Practically, one mixes in a test tube equal volumes (0.25 ml) of an antigen solution and immune serum and then at stated times one adds a drop of the sensitized erythrocytes. If the antigen neutralized the antibodies, the erythrocytes do not become agglutinated and fall to the bottom of the tube in the shape of a small button or a ringlet. If the antigen fails to neutralize the antibodies in the immune serum, the erythrocytes become agglutinated under the influence of the specific antibodies and, falls down occupying the whole bottom of the test tube.

"Thus," the authors say, "in this reaction it comes to an interaction of the antigen and the antibodies, and this interaction is made manifest with the aid of a reacting system - the erythrocytes sensitized with the antigen. In other words, the basis of the new reaction is the passive hemagglutination reaction."

As defined by Levi and associates (1960), a serum unit is the highest dilution of an immune serum which still produces a clear agglutination of the sensitized erythrocytes. In the antibody neutralization test the immune serum acts in dilutions corresponding to a few units.

As an illustration of their statements the authors quoted the protocol of a test made with a plague immune serum of the Saratov "Mikrob" Institute, the Fraction IA of a plague strain and formalized

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erythrocytes sensitized with the same antigen. The mixture of the antigen and the serum was incubated for two hours at 37°C and after addition of the erythrocytes the reaction was observed at room temperature. A white paper was placed under the test tubes mounted in a stand so that it was possible to read the results through the fluid in the tubes.

<u>Serum</u> <u>Dilution</u>	<u>Amount of Fraction IA in Micrograms</u>										<u>Control</u> <u>of Serum</u> <u>Activity</u>
	<u>1.0</u>	<u>0.5</u>	<u>0.25</u>	<u>0.12</u>	<u>0.062</u>	<u>0.031</u>	<u>0.016</u>	<u>0.008</u>	<u>0.004</u>	<u>0.002</u>	
1:4000	-	-	-	+	+	+	+	+	+	+	+
1:8000	-	-	-	-	+	+	+	+	+	+	+
1:16000	-	-	-	-	-	+	+	+	+	+	+
1:32000	-	-	-	-	-	-	+	+	+	+	+
1:64000	-	-	-	-	-	-	-	+	+	+	+
1:128000	-	-	-	-	-	-	-	-	-	+	+
1:256000	-	-	-	-	-	-	-	-	-	+	+

Thus, the authors stated,

"one serum unit was equal to a serum dilution of 1:256,000. It is clear that the greatest sensitivity is obtained when the immune serum is used in amounts corresponding to one or a few units. It is easy to perceive that there exists a definite relationship between the amount of the antibodies and that of the antigen. For instance, sixty-four serum units are neutralized by 0.25 micrograms of Fraction IA, thirty-two units by 0.12 micrograms, etc. It is remarkable to observe the high sensitivity of the neutralization reaction with the aid of which it is possible to detect minimal doses of the antigen - hundred and thousand parts of a microgram."

It seemed to be indicated to add the erythrocytes two hours after the incubation of the antigen-serum mixture. The simultaneous mixture of all three ingredients gave also positive results, but the sensitivity of the reaction was lower.

The antibody neutralization reaction, in which erythrocytes sensitized with the Fraction I of P. pestis serve as the reacting system, was found to be highly specific, since the addition of other antigens of this organism does not neutralize the antibodies to the Fraction I and, therefore, does not lead to the inhibition of the hemagglutination. With the aid of this reaction it is easy to observe the Fraction I in water-salt extracts of the plague bacillus notwithstanding the presence of other antigens. The extracts of pseudotuberculosis bacilli or of plague strains which do not synthesize the Fraction I do not neutralize the antibodies to this fraction.* The antibody-neutralization reaction permits to determine with fair exactness the contents in Fraction I in a given preparation, if side by side the pure Fraction I is titrated. In this case the preparation, used in a dilution which still inhibits the hemagglutination, will contain approximately the same amount of Fraction I as the control solution neutralizing the antibodies in the test in question.

In place of the water-soluble antigens live plague bacilli can act in the antibody neutralization test, as shown by the following table:

Antibody Neutralization Reactions With Live Plague Bacilli at Different

<u>Temperatures of Incubation for 72 Hours</u>		
<u>Incubation</u> <u>Temperature (C)</u>	<u>Number of</u> <u>Serum Units</u>	<u>Minimal Neutralizing Dose of Live</u> <u>Plague Bacilli in Thousands of Orgs.</u>
28.0	8	2,000
	2	125
37.0	8	1,000
		31

The minimal neutralizing dose of live plague bacilli in the antibody neutralization tests varied from 16,000 to 1 million organisms depending upon the strains tested with 2-8 serum units. The tests were satisfactorily made with organisms grown for 24-96 hours at 37°C. Live and dead pseudotuberculosis bacilli did not inhibit the hemagglutination.

* Thus, as the authors maintained in the concluding part of their article, neutralization tests with live organisms proved useful for a rapid differentiation of plague and pseudotuberculosis bacilli.

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The neutralization reaction was suitable for the observation of the Fraction I in the internal organs of rodents succumbed to plague. For this purpose one prepares in a mortar a suspension of the organs in normal saline, puts the suspension into a test tube and after 30-60 minutes makes tests with clear upper layer.

The highest neutralizing activity was shown by suspensions of the spleen and liver. The organs of non-infected white mice and guinea-pigs showed no neutralizing activity. The organ suspensions were made in a sterile mortar but under conditions not excluding a contamination. The suspensions were kept at 4°C but nevertheless already after a few days cultures on agar showed an abundant growth of an extraneous flora. At the same time the neutralizing activity of the suspensions became lowered only to an inconsiderable degree.

The organs of a guinea-pig succumbed to plague were kept in Petri dishes at 25°C. Attempts to isolate from them P. pestis after a storage of ten days were unsuccessful. Washings of the growth did not neutralize the antibodies in plague-immune serum but the suspensions made from the stored organs showed a neutralizing activity about equal to that of the fresh organs. It would thus appear that the neutralizing activity of the suspensions depended not so much upon the presence of live plague bacilli but upon that of the Fraction I.

Two suspensions made from plague-infected blocked fleas gave a negative result in hemagglutination tests - findings were related, apparently, to the low temperature requirements of these insects.

The addition of one drop of formalized erythrocytes to the test tubes led to a bactericidal action, so that no growth of P. pestis could be obtained from the contents of the latter.

263. Marennikova, S. S. and Mal'tseva, N. N., Selection and properties of genetically heterogenous variants of the smallpox vaccine virus. Vopr. virusol. (1965) 2:142-149.
(From the Moscow SR Institute of Virus Preparations.)

In the conclusions to this well illustrated article it is stated that it is possible to select from genetically heterogenous vaccines the variants composing them through (a) serial passage of the products through the chorio-allantoic membrane of chick embryos or (b) alternate passages through suckling mice and

chick embryos. The isolation of the variant preponderant in a given vaccine could be easily obtained with the aid of 2-3 passages through chick embryos. However, for the isolation of variants present in the vaccines in lesser proportions repeated passages through chick embryos or white mice were necessary. The differences in the nature of the various smallpox vaccines were found to depend mainly upon that of the virus variant preponderant in them.

264. Andzhaparidze, O. G. et al., Studies on the variability of the tick-borne encephalitis virus. Report I. Prolonged cultivation of the viruses of tick-borne encephalitis in pig embryo kidney cell cultures and in chick embryos.
Vopr. virusol. (1965) 2:165-167.
(From the Moscow Institute of Virus Preparations.)

The main conclusion reached by the authors of this article, the details of which must be studied in the text, was that repeated passages of the viruses of the tick-borne encephalitis group in pig embryo kidney cell cultures at 33°C (70 passages), or at 40°C (80 passages), or embryonated eggs (120 passages) did not cause a change in the neuropathogenic properties of the strains for white mice.