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The Institute of Contemporary Russian Studies

Fordham University  
New York 58, N. Y.

Selected Abstracts

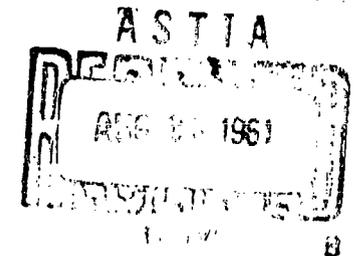
from

Soviet Biomedical Journals

No. 6

Prepared by

Dr. Robert Pollitzer



61-4-3  
XEROX

Contract No.

DA 18-108-495-CML-867

June 1961

405. Nikiforov, L.P., Experience gained through zoological-parasitological investigations of natural foci of tick-borne encephalitis in the Tiazhinsk raion of the Kemerov oblast. 3. Symphysiology of the natural foci. Relationship between Ixodes persulcatus and its hosts. Meditsinskaia parazitologiya, etc. 30 (1961) 1: 10-23. (From the Entomological Department of the E.I. Martsinovskii Institute of Medical Parasitology and Tropical Medicine, MH, USSR.)

The first communication on zoologo-parasitological investigations in the district mentioned in the title, describing the focus of tick-borne encephalitis situated there and the methods of investigation used, appeared in 1959 in the journal Meditsinskaia parazitologiya, etc. (Vol. 28, No. 6, pp. 676-682), the second (cf. Abstract #291) dealt with in the same journal in 1960 (Vol. 29, No. 3, pp. 255-267). As its title indicates, the present well-documented article, which does not lend itself to the purpose of a brief analysis, exhaustively discusses the relationship between Ixodes persulcatus, the main vector of the infection, and its vertebrate hosts.

406. Alifanov, V.I. et al., Experimental data on the role of gamasid ticks in the transmission of the viruses of tick encephalitis and of Omsk hemorrhagic fever. Meditsinskaia parazitologiya, etc. 30 (1961) 1: 24-26. (From the Scientific Research Institute of Infections with Natural Focality, MH, RSFSR, Omsk.)

As stated by the authors, within recent years intensive epizootics, produced by the virus of Omsk hemorrhagic fever, have been observed in parts of the Omsk oblast among Ondatra zibethica, a species artificially introduced for the purpose of breeding. The infection of these muskrats with the virus (which according to its antigenic properties is closely related to the tick encephalitis virus) was obviously derived from the water-rats (Arvicola terrestris) which appear to be the reservoir species. As suggested by experimental findings of the authors,

"the transmission of the Omsk hemorrhagic fever virus from the water-rats to the muskrats and further among the latter through gamasid ticks forms at least one of the possible means of spread of this epizootic among the muskrats."

Probably the gamasid ticks also take part in the spread of the virus among the water-rats, thus being instrumental in the maintenance of the natural focus of Omsk hemorrhagic fever.

407. Smetanina, M.A., Efficacy of the measures for fighting the ixodes ticks in the Tatar ASSR. Meditsinskaia parazitologiya, etc. 30 (1961) 1: 58-63. (From the Republic Sanitary-Epidemiological Station, MH, of the Tatar ASSR).

The author reports on attempts to destroy the ticks through the distribution of 10% DDT or hexachlorane dust in amounts of 40-50 kg per hectare from airplanes so as to check the spread of tick-borne encephalitis. As she states at the conclusion of her article,

"Dusting of the forests from airplanes in the spring, if well done, is a highly expedient and efficacious method of fighting the ticks. Under the conditions of the Tatar ASSR it permitted within a short time tick eradication in forest parcels measuring from 3,000 to 8,000 hectares. In order to liquidate the foci and to prevent a further spread of the incidence of tick encephalitis in the Tatar ASSR it is necessary to recommend more extensive DDT and hexachlorane application to the forest massives serving as the place of probable human infection, and to promote a more active participation of the people in the fight against tick encephalitis."

408. Novokreshchenova, N.S. et al., Use of radio-active carbon for the labeling of fleas. Meditssinskaia parazitologiya, etc. 30 (1961) 1: 72-76. (From the State Scientific Research Institute of Microbiology and Epidemiology of South-East USSR - "Mikrob.")

Working with Xenopsylla cheopis and Nosopsyllus fasciatus, the authors came to the following conclusions:

1. For the labeling of fleas one may use the radio-active isotope  $C^{14}$  in combination with glycine or acetic acid.
2. Labeling of fleas may be effected either by means of the blood of rodents fed with the isotope or by placing the latter on the body surface of the fleas.
3. For the observation of labeled fleas the method of autoradiography proved best.
4. If the fleas were fed on rodents within the days immediately following the introduction of the isotope in a dose of 500 micro-c per mouse, the "internal labeling" of the insects remained manifest for 5 months. Glycine proved better in this respect than acetic acid.
5. If the radio-active substances were applied externally to the fleas, labeling remained manifest for two months.

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- Dorokhova, V.S., Distribution of tick encephalitis and its prophylaxis in the Primorskii Krai. Tezisy i doklady vyezdnoi sessii AMN SSSR vo Vladivostoke, pp. 5-17.

Selected Abstracts/169

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410. Gefen, N.E. and Gordon, G.IA., Aerosol immunization with dry live vaccine and anatoxins. Fifth communication. Study of the morphological changes caused by aerosol immunization with some dust vaccines. Zh. mikrobiologii, etc. 32 (1961) 1: 40-46.

In contrast to numerous investigations made in the case of subcutaneous administration of live vaccines, so far the morphological processes caused by aerosol immunization with such vaccines, especially with dust vaccines, have been little studied. The present authors devoted, therefore, attention to the latter subject, using 300 guinea-pigs, 20 sheep and 12 monkeys. The immunizing doses of the live brucellosis, tularemia, anthrax and plague vaccine administered to these animals with the aid of the technique described in the previous communications by the authors and their associates varied from 1,000 to 10 billion organisms. The immunized animals were sacrificed at intervals ranging from one to 60 days and their organs were used for histological and histochemical examinations.

Discussing the results of these studies which--in the case of brucellosis in particular--are described in considerable detail, the authors stated that:

"Side by side with morphological changes common for all the dust vaccines one could note some specific peculiarities for each. Thus, after immunization with tularemia vaccine one noted the appearance of epitheloid and lymphoid cell granulomata in the lymph nodes, the spleen and sometimes the liver, the frequency of which stood in direct relation to the vaccine doses used. As a rule these granulomata did not lead to tissue necrosis but disappeared without trace or, in rare cases, led to scar formation in the connective tissue. For aerosol immunization with anthrax and plague vaccines was characteristic an earlier appearance of the macrophage reaction, a rapid generalization of the process and the more frequent appearance of inflammatory changes, sometimes accompanied by necroses.

These phenomena may stand in connection with the selective action of plague and anthrax bacilli on the wall of the blood vessels."

The conclusions reached by the authors were that:

1. After aerosol vaccination with brucellosis, tularemia, anthrax and plague vaccines one notes the development of a vaccinal process the morphological manifestations of which consisted mainly in the transformation

and proliferation of the reticulo-histiocytary elements of the tissues of the lungs, the lymph nodes, the spleen, etc., developing on the basis of a changed tissue metabolism.

2. The morphological manifestations of the vaccinal process after aerosol immunization were fundamentally similar to those observed after subcutaneous vaccination. At the same time, after aerosol immunization the system of reacting reticulo-endothelial tissues was more extensive, since it included more actively and earlier the reticulo-endothelial apparatus of the lungs with its network of regional lymph nodes.

3. The degree to which the morphological changes were marked stood in direct relation to the vaccine doses used for immunization.

411. Kiktenko, V.S. et al., Photoelectric estimation of the number of aerosol particles of organic and inorganic origin. Gigiena i sanitaria 26 (1961) 2: 47-53.

The authors describe a photo-electronic installation to be used in combination with an ultramicroscope for an estimation of the number of aerosol particles.

Summarizing the results obtained with this combined apparatus the authors stated that

1. The installation permits to carry out counts of aerosol particles of organic or inorganic origin "objectively, quickly and with sufficient accuracy."
2. The photoelectric installation and an electro-mechanic meter utilized together with the ultramicroscope can be used for counting automatically the particles of bacterial aerosols in the aerosol chambers.
3. The installation combined with the ultramicroscope can be recommended for a study of the quantitative features of aerosols with different phases of dispersibility.

412. Marei, A.M., Decontamination of radioactive waters. Gigiena i sanitaria 26 (1961) 2: 84-89.

This article, which surveys the various methods proposed in the Soviet Union or abroad for the decontamination of radioactive waste and sewage waters, does not lend itself to the purposes of a brief review.

Selected Abstracts/173

413. Zupnik, D.N., An instance of brucellosis attacks among inhabitants of towns and workmen's settlements. Vrachebnoe delo (1961) 1: 130. (From the Department of Infectious Diseases of the Medico-Sanitary Service of the Lenin Mine.)

Brucellosis is not rare in inhabitants of towns or workmen's settlements without contact with domestic animals. Thus in the infectious disease ward of the center of one raion there were admitted from 1948-1952 ninety-seven brucellosis patients, of whom 31 were inhabitants of the center or of workmen's settlements and had had no contact with domestic animals. Twenty-three of the patients habitually consumed raw milk bought on the local market, where goats' milk was also sold.

Diagnosis was made with great delay, but once it was established, the patients were rapidly cured (method of "specific" treatment not stated).

The author emphasizes the necessity of acquainting the urban medical personnel with brucellosis and of the implementation of measures preventing the appearance of the disease in urban communities.

414. Leiman, V.N. and Donetskais, E.I., Splenomegaly in brucellosis and its treatment. Vrachebnoe delo (1961) 2: 99-101. (From the Departments of Infectious Diseases and of Morbid Anatomy of the Kuibyshev Medical Institute).

Among 578 brucellosis patients admitted in Kuibyshev, in the hospital of the Kumogorskii oblast and in the Chkalov oblast during the period 1950-1958, four were admitted with splenomegaly. One of these patients was successfully treated with splenectomy, the others with vaccine, one, after intravenous vaccinotherapy had failed, with antibiotics and balneotherapy.

415. Pilipenko, V.G., On the spread of the vaccinal bacteria in the body guinea-pigs cutaneously immunized with the combined vaccine against plague, tularemia and brucellosis. Zh. mikrobiologii, etc. 32 (1961) 1: 46-51. (From the Scientific Research Anti-Plague Institute of the Caucasus and Transcaucasus.)

In a previous paper the authors reported that in guinea-pigs which had been cutaneously inoculated with a combined vaccine against plague, tularemia and brucellosis, 6 months after immunization the number of animals which had lost the immunity to massive doses of plague or tularemia bacilli was two times higher than the corresponding number of animals immunized with plague or tularemia monovaccines. The authors now report on further studies to elucidate the cause of these discrepancies.

They used for this purpose a combined vaccine, made from 1-2 day old cultures of plague bacilli (strains 1 and 17), tularemia bacilli (strain not stated) and brucellosis bacilli (strain 19-BA).

Inoculation was done with 3 drops of the mixed vaccine containing approximately 3 billion *P. pestis*, 1.5 billion brucellae and 75 million of tularemia bacilli. The same doses were used for the administration of the corresponding monovaccines.

To study the vaccinal process, couples of the inoculated animals were sacrificed after intervals of respectively 3 hours, 1, 5, 10, 20, 30, 45, 60 (maximum for tularemia) and 90 days.

In the case of plague, cultures were made on agar containing sodium sulfite from the site of inoculation (abdomen), the various lymph nodes and the internal organs (lung, liver, spleen and blood), which were incubated for 5 days at 28°C.

In the case of the guinea-pigs inoculated with the combined vaccine, plague bacilli could be cultivated from animals sacrificed after intervals ranging from 3 hours to 5 days, whereas from the animals inoculated with plague monovaccine positive cultures were obtained during a period of 10 days after vaccination. From the site of infection plague bacilli could be isolated in the former case only from the animals sacrificed 3 hours after inoculation, whereas the animals sacrificed after administration of plague monovaccine proved positive in this respect for a period of up to 5 days.

Besides from the site of inoculation, with one exception growth of *P. pestis* was obtained only in cultivations from the groin and axillary lymph nodes and occasionally from the para-aortic lymph node. Only in one instance, concerning a guinea-pig inoculated with monovaccine and killed on the 10th day after vaccination, a colony of *P. pestis* was detected on the plate inoculated with material from the spleen of the animal.

Challenge tests with 2,000 DCL of *P. pestis* made 7 months after inoculation gave the following results:

<u>Group of Animals</u>	<u>Type of Vaccine</u>	<u>Number of Animals</u>	<u>Died</u>	<u>Results of Challenge Tests</u>	
				<u>Survived</u>	<u>Survival %</u>
(1)	Combined	11	7	4	36.0
(2)	Plague	11	3	8	73.0
(3)	Controls	10	10	0	0.0

Thus the animals inoculated with the plague monovaccine proved twice as resistant as those immunized with the combined vaccine.

For the cultivation of brucellae from the inoculated animals liver agar was used. To inhibit the growth of *P. pestis*, 1-2 drops of plague bacteriophage were spread over the agar surface before the cultivations were made. Triturated organ pieces were also used to make cultivations in broth. The cultures were kept at 37°C for 15 days. In the

Selected Abstracts/175

cultures from animals killed 1-5 days after combined vaccination sometimes both plague bacilli and brucellae grew.

As shown in a table, already 3 hours after inoculation with either the combined or the monovaccine a generalized vaccinal process had become manifest in the test animals. The organisms were found in the lymph nodes and the internal organs. From the guinea-pigs immunized with the combined vaccine, brucellae could be cultivated up to 20 days after inoculation. After that a regional process was found to be present only in one of the two guinea-pigs killed on the 60th day after vaccination. In cultures from the site of inoculation, positive cultures were obtained from the combinedly vaccinated animals up to 5 days, from those receiving the monovaccine up to the 10th day after inoculation.

The generalized vaccinal process was found to be more prolonged and more frequent in animals immunized with monovaccine. There was likewise a difference in the abundance of growth of the brucellae between the animals inoculated respectively with combined and with monovaccines. Thus in the former group (combined vaccination) from the 5th up to the 20th day after inoculation 3-4 times fewer colonies grew on the plates made from the lymph nodes and internal organs than was the case when corresponding cultivations were made from the guinea-pigs inoculated with monovaccine.

Challenge tests made 5 1/2 months after immunization with 10 organisms of the *Brucella melitensis* strain 548 gave the following results:

Results of Challenge Tests

<u>Group of Animals</u>	<u>Kind of Vaccine</u>	<u># of Animals</u>	<u>Generalized Infection</u>	<u>Regional Infection</u>	<u>No. Infection</u>	<u>Number (and %) of Immune Animals</u>
(1)	Combined	12	6	0	6	6 (50%)
(2)	Brucella	9	1	1	7	8 (89%)
(3)	Controls	10	10	0	0	0 (0.0%)

Thus the animals inoculated with brucella monovaccine proved far more persistently resistant to challenge than those receiving combined vaccination.

In order to study the distribution of tularemia bacilli in the organs of the vaccinated guinea-pigs, Pilipenko and his associates did not rely upon bacteriological examinations but subcutaneously injected white mice with suspensions of the organs of the test animals and after one month challenged the mice with 100 DCL of a tularemia culture. Survival of the challenged mice was taken to furnish proof that the organs used

for their injection had contained tularemia bacilli.

Commenting upon the results obtained in this manner, the authors stated that:

"only in a minority of the guinea-pigs inoculated with the combined vaccine was it possible to confirm the presence of the bacteria, and that only in the regional lymph glands and only within 10 days after immunization. Two times more positive results were obtained in the animals inoculated with (tularemia) monovaccine; moreover, in 3 out of 8 of the guinea-pigs the presence of the bacteria was demonstrated, besides in the regional lymph nodes, also in the spleen and liver. In one guinea-pig tularemia bacteria were observed in a regional lymph node 30 days after inoculation."

A part of the animals under test was challenged 6 months after inoculation with 5,000 DCL of a tularemia culture. In contrast to the findings recorded above, there were twice as many animals resistant to the challenge among those inoculated with the combined vaccine than among those inoculated with tularemia monovaccine. Since, however, these results were not in accord with those obtained in previous investigations, this is a matter requiring further study.

Summarizing their findings, the authors stated that in the guinea-pigs inoculated with the combined vaccine the plague, brucellosis and tularemia bacilli persisted for shorter periods than in the animals inoculated with the corresponding monovaccines. Correspondingly, a generalized vaccinal process was rarer in the former group of animals. When challenged 6-7 months after vaccination, the animals inoculated with plague or brucellosis monovaccine proved more frequently resistant to the infection than those inoculated with the combined vaccine.

To explain these discrepancies the authors postulated that after combined cutaneous vaccination fewer organisms penetrate through the skin than when the corresponding monovaccines are administered. It might be possible to improve the results of combined vaccination by an increase of the concentration of the vaccine or of the dose used for inoculation.

The formal conclusions reached by Pilipenko and his co-workers were that:

1. In guinea-pigs cutaneously inoculated with the combined trivaccine the plague, tularemia and brucellosis bacteria were found in the body of the test animals for shorter periods than was the case in the animals inoculated with the monovaccines.
2. A generalized vaccinal process was rarer in the combinedly vaccinated animals than in those immunized with the monovaccines.
3. Animals proving immune to plague and brucellosis (in previous investigations to plague and tularemia) 6-7 months after inoculation were fewer in the combinedly vaccinated group than in those inoculated with the corresponding monovaccines.

Selected Abstracts/177

4. The mechanism of these differences in the length of the immunity and the means to overcome the lesser potency shown in this respect by the combined vaccine need further study.

416. Smirnov, S.M. et al., Cutaneous vaccination of man against brucellosis with a vaccine prepared from the Brucella abortus strain 19. Zh. mikrobiologii, etc. 32 (1961) 1: 51-54. (From the Central-Asian Anti-Plague Institute, MN, USSR).

Dealing with the history of brucellosis vaccination in the Soviet Union, the authors state that after careful studies on laboratory animals Vershilova and other Soviet workers prepared a vaccine from the strain Br. abortus 19, which had been received from the U.S. in 1943. After tests on volunteers and epidemiological studies this vaccine was found to be suitable for mass immunization.

Afterwards Vershilova isolated from the strain Br. abortus 19 a variant BA, which showed less residual virulence, and since 1952 this variant was used for subcutaneous vaccination. This method, applied every year in brucella-infected agricultural establishments and meat-packing factories, gave good results, but did not lead to a general lowering of the brucella incidence, because it was established that 60-90% of the patients had come from apparently brucella-free farms, where no vaccinations had been given. It became clear that in view of the situation it was necessary to resort to wholesale vaccination in all farms where goats or sheep were kept. However, insufficiency of the vaccine supply as well as the inexpediency of the subcutaneous method of inoculation and the necessity of making allergic tests before vaccination militated against such plans.

In 1948-1953 Zenkova, working with the live brucellosis vaccine N1E1 from the strain 19, demonstrated the superior value of cutaneous inoculation, which obviated the need for preliminary allergic tests.

Ample use of this method was made during a mass vaccination campaign in the Kazakhstan in 1956, when out of a total of 659,000 vaccinated 220,000 persons were cutaneously inoculated against brucellosis without preliminary selection. It was established that under these circumstances cutaneous inoculations caused slight reactions, were innocuous and immunologically effective.

Since these findings were not universally confirmed, the USSR Ministry of Health proposed that the Central-Asian Anti-Plague Institute should gather further experiences, using for this purpose the brucellosis vaccine manufactured from the strain 19 in the Kashintsev factory for biological products of the USSR Ministry of Agriculture, which was found to be of a satisfactory standard in preliminary laboratory tests.

In 1957-1958 over one million people were cutaneously inoculated with this vaccine in the Soviet Union. For a detailed study

of the vaccine, the authors personally inoculated 2,697 persons, mainly those aged 20-50 years, out of whom 471 showed a positive Burnet reaction before vaccination.

The conclusions the authors drew from these observations were as follows:

1. The vaccine prepared from the Brucella abortus strain 19 in the Kashintsev factory fulfilled all requirements qualifying it as suitable for human vaccination.

2. Mass campaigns with this vaccine confirmed its slight reactogenicity.

3. After cutaneous inoculation of persons with positive sero-allergic or allergic reactions one noted in some instances a severe but short-lasting reaction which, however, does not contra-indicate the method.

4. One may claim that the preliminary administration of brucellin before vaccination for the purpose of Burnet's tests increased the sensitivity of the organism to the vaccine; as a result among the persons with a positive Burnet reaction the percentage and the degree of intensity of the post-vaccinal reactions were increased.

5. In the majority of the persons inoculated with the vaccine of the Kashintsev factory one noted a marked immunological response. The sero-allergic reactions became maximally positive 1-2 months after vaccination; then their intensity gradually decreased, but still one year after the inoculation the reactions remained positive in more than 80%. The allergic reactions became maximal 304 months after vaccination in about 60% and was still positive in about 40% of the vaccinated after one year.

6. On account of these findings one can recommend large-scale anti-brucellosis vaccination with the above mentioned vaccine without preliminary selection of the persons reacting negatively in sero-allergic tests.

It is of importance to add to these conclusions that according to Smirnov and his associates, quoted in the above reviewed article, the brucellosis incidence in the group inoculated with the Kashintsev vaccine was 6 1/2 times lower than among the non-vaccinated.

#### References

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Zenkova, N.F., Trudy instituta kraevoi patologii Akademii nauk Kazakhsk. SSR. Alma Ata 3 (1956) 5: 51.

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Smirnov, S.M. et al., Tesisy dokladov nauchnoi konferentsii protivochumnikh uchrezhdenii Kazakhstana i srednei Azii. Alma-Ata (1959):77.

417. Vershilova, P.A. and Chernysheva, M.I., Protective function of the local inflammatory process caused by live vaccine. First report. Zh. mikrobiologii, etc. 32 (1961) 1: 60-64. (From the Gamaleia Institute of Epidemiology and Microbiology, AMS, USSR.)

Previous investigations had established that guinea-pigs inoculated with live brucellosis vaccine showed already 6-72 hours after vaccination a resistance to challenge with a virulent Br. melitensis culture. It was postulated that this early resistance of the animals was caused by a process of non-specific phagocytosis in the focus of inflammation produced by the vaccine administration.

For a further study of this early resistance of the test animals the present authors experimented with 132 guinea-pigs which were immunized with 10 million doses of live tularemia vaccine and one, 5 or 16 days afterwards received, either into the site of vaccination or into the opposite groin region, injections of 25 organisms of a virulent Br. melitensis strain or of 250 million doses of an attenuated Br. abortus culture.

Bacteriological and histological examinations of the animals under test, the results of which are set forth in detail, proved that the inflammatory process produced by the vaccination was apt to create a state of resistance against a heterogeneous infection and that this resistance was the result of an unspecific process of phagocytosis, in which neutrophile leucocytes played the main role.

418. Pankov, N.A., Quantitative determination of the live spores in the anthrax vaccine STI. Zh. mikrobiologii, etc. 32 (1961) 1: 104-107.

The generally accepted method of determining the number of viable organisms in anthrax or other live vaccines, consisting of the plating of adequately diluted suspensions of the organisms in normal saline or in distilled water, gives incorrect results due to the presence

of agglomerations of the bacterial cells, which give rise to one colony on the plates. The author tried to overcome this difficulty by using for assays of the STI anthrax vaccine instead of suspensions of the organisms in distilled water such in 1% solution of ox-bile, which had been sterilized at 115°C for 20 minutes.

As shown by comparative tests, the results of which are recorded in tabular form, the suspensions made from the vaccinal anthrax strain in bile solution contained at an average 1.6 times more viable cells than corresponding suspensions in distilled water. The author recommended, therefore, to use suspensions in 1% watery solutions of ox-bile for the standardization of the live anthrax vaccine.

419. Zaitseva, A.I., Study of the efficacy of therapeutic brucellosis vaccine prepared on a medium containing yeast autolysate. Zh. mikrobiologii, etc. 32 (1961) 1: 107-110. (From the Mechnikov Institute of Epidemiology and Microbiology, Odessa.)

P.F. Zdrodovski (in his work on brucellosis, Moscow, 1953) and many other Soviet authors maintained that specific vaccino-therapy was the best means to treat brucellosis. The fluid vaccine presently used in the Soviet Union for this purpose is made from heat-killed Br. melitensis and Br. abortus strains grown on solid glucose-glycerol-liver infusion media. In place of this method of cultivation the author experimented with a medium of the following composition: yeast autolysate--300 ml; tap water--700ml; lactic acid--5 g; glycerol--10 g; agar--40 g (pH 6.6).

To prepare vaccines from the brucella strains grown on this medium suspensions of the growths containing 10 billion organisms per ml were heated for one hour at 60°C and 0.5% phenol was added.

A comparison of the vaccines obtained with the aid of this medium with the currently manufactured brucella vaccine led the author to the following conclusions:

1. The brucellosis vaccines prepared respectively through cultivation on glucose-glycerol-liver infusion media and on yeast-autolysate media were almost identical in their therapeutic efficacy and antigenicity.

2. The yeast-autolysate medium is cheaper, easier to prepare and to standardize and does not contain animal protein.

3. The experimental vaccines prepared with the aid of the yeast-autolysate medium retained their initial properties when stored for 6 months at 8°-10° C.

4. It deserves attention that the lowly virulent strains Br. suis 4 and 18 and Br. abortus bovis 6 proved as suitable for vaccine manufacture as the virulent strains Br. melitensis 20 and Br. abortus bovis 494.

Selected Abstracts/181

420. Kotliarova, R.I. and Ledovskaia, A.P., Enhancement of the virulence of *V. cholerae* through its passage in animals with reduced protective reactions. Zh. mikrobiologii, etc. 32(1961) 2: 80-83. (From the Scientific Research Anti-Plague Institute of the Caucasus and Transcaucasus, MH, USSR.)

The conclusions reached by the authors were:

1. In guinea-pigs, the resistance of which has been changed by keeping them on a scorbutic-meat diet, optimal conditions are created for the multiplication and for an increase of the pathogenic properties of the cholera vibrio.

2. After 71 passages by the intraperitoneal route in guinea-pigs kept on this diet, the virulence of the cholera strain No. 267 (Ogawa type) for young guinea-pigs increased 32 times, the DCL equaling one billion live organisms.

3. The acquired virulence proved to be quite stable and after 2 years and 10 months (limit of observation), even if kept on artificial media, the passaged culture still caused the death of part of the test animals when administered in a dose of one billion live organisms.

421. Kremneva, Z. IA., Comparison of the clinical characteristics of brucellosis in vaccinated and non-vaccinated persons. Zh. mikrobiologii, etc., 32 (1961) 2: 87-91. (From the Stalinsk Medical Institute on the basis of cooperation with the Kalinin Clinical Hospital)

The author compared the clinical course of brucellosis in 65 patients who had been vaccinated against this infection with that in 100 non-immune persons.

Characteristic for the first mentioned group were a gradual onset of the disease, its mild course with subfebrile temperatures, a shorter duration, absence of affections of the locomotor apparatus and of complications.

Of importance is that brucellosis attacks appeared to be 3 times less frequent in persons who had been vaccinated 2 to 9 months before they fell ill (i.e. during the period of maximal immunity) than in those who had been vaccinated before or after this period. The author postulated accordingly that vaccinations against brucellosis ought to be administered not later than 1-2 months before the lambing season or the mass slaughter of actually or potentially infected domestic animals.

422. Miklov, A.P., Precipitation reaction as a method of accelerated brucellosis diagnosis. Zh. mikrobiologii, etc., 32 (1961) 2: 95-101. (From the Mechnikov Institute of Epidemiology and Microbiology, Odessa.)

To speed up the laboratory diagnosis of brucellosis the author recommended the use of a precipitation test with trichloroacetic acid extracts of the organs of infected guinea-pigs and anti-anaendoantigenic serum (originally called anti-endotoxic serum--see Anina-Radchenko, Zh. mikrobiologii, etc. [1949] 2: 69) raised in oxen. Summarizing the results obtained with this test, the author stated that:

1. Treatment of the material with a 5% solution of trichloroacetic acid proved the most sensitive method for obtaining antigens from the organs of brucella-infected guinea-pigs.
2. Precipitation tests made with such organ extracts permitted the detection of the antigen already in a considerable number of the animals examined during the first days after infection.
3. To diagnose brucellosis during life it is best to derive the antigen from the whole blood, inasmuch as in this case the presence of the specific antigen may be demonstrated with the aid of the precipitation reaction already on the 6th-9th day after infection of the test animals.

423. Zilfian, V.N., History of plague in Armenia. Zh. mikrobiologii, etc., 32(1961) 2: 135-138. (From the Armenian Anti-Plague Station, MH, USSR.)

Dealing besides with the long history of plague in Armenia also with the recent incidence of the disease, the author stated that --apart from 2 patients with bubonic plague arriving from Batum in 1920 --human plague was absent from Armenia since 1877.

During the period from 1931-1933 a Persian gerbil was found infected with pseudotuberculosis in the Gorisskii raion. A large-scale survey of the wild rodents and their ectoparasites in 1941 gave negative results. However, in 1958 the presence of plague was demonstrated in wild rodents and their fleas collected in the Amasiiskii Gukasianskii and Spitakskii raions. The author postulated that

"the plague epizootic detected in 1958 among the rodents in the north-western part of Armenia was part of the plague epizootic observed in Turkey, especially in the territory of the former Turkish Armenia, where human plague has continued for centuries."

He urged accordingly that attention had to be paid to quarantine measures at the borders of the Soviet Union as well as to surveys of the local plague foci.

Selected Abstracts/183

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Illiutovich, A. IU. et al., To the problem of Q-fever in the Stavropolsk krai. Sbornik nauchnykh trudov Stavropolskogo nauchno-issledovatel'skogo instituta vaktsin i syvorotok, Stavropol (1958) 5: 317-326.

Ilina, V.N. et al., Clinique and psychopathology of Q-fever. Zhurnal nevropatologii i psikiatrii imeni S.S. Korsakova 59 (1959) 3: 295-303.

Kasatkina, I.D., Clinique and diagnosis of Q-fever. Thesis, Alma Ata (1959).

Kislitsyna, L.I. et al., Preliminary data of a study of Q-fever in the Chita oblast. Nauchnye zapiski Chitinskogo nauchno-issledovatel'skogo instituta epidemiologii, mikrobiologii i gigieni (1958) 4: 54-57.

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B. Anthrax:

Agababian, M.M., Production of radio-active anthrax bacilli. 1 st report. Izvestiia Akademii nauk Armianskoi SSR. Biologicheskie i sel'skokhoziaistvennye nauki 12 (1959) 1: 69-74.

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Gureva, E.P. et al., Possibility of a change of the natural tularemia focus in the Volga delta resulting from the construction of the water supply system. Trudy Astrakhanskoi protivochumnoi stantsii (1958) 2: 265-283.

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#### E. Encephalitis

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Gorlova, O.N., Materials concerning the tick fauna in one of the tick encephalitis foci of the Chita oblast. Nauchnye zapiski Chitinskogo nauchno-issledovatel'skogo instituta epidemiologii, etc. (1958) 4: 62-64.

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Selected Abstracts/187

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425. Tsvetkova, E.M., On the therapeutic action of mycerin and levomycetin in experimental listerellosis. Antibiotiki 6 (1961) 3: 231-233. (From the Tularemia Laboratory of the Department of Diseases with Natural Focality of the Gamaleia Institute of Epidemiology and Microbiology.)

Though active in vitro, mycerin and levomycetin proved therapeutically ineffective in listerella-infected white mice.

Chlortetracycline, given orally or parenterally, proved effective in experimental listerellosis.

426. Iarovoi, L.V. et al., Results of the treatment of patients with generalized brucellosis with antibiotics and vaccine. Antibiotiki 6 (1961) 3: 231-233. (From the Department of Infectious Diseases of the Stavropol Medical Institute.)

The authors observed 84 patients with generalized brucellosis, 54 of whom were treated with antibiotics, 27 with vaccines (administered in 23 instances in combination with antibiotics). Three slightly affected patients received only symptomatic treatment.

Analysing the results obtained, the authors came to the following conclusions:

1. Antibiotics (synthomycin or levomycetin, chlortetracycline, streptomycin and oxytetracycline administered intramuscularly) and also vaccino-therapy are effective for the treatment of patients with generalized brucellosis of the sheep-goat type. Adequately conducted treatment leads to compensation or improvement and then to recovery. As a rule the working capacity does not become impaired, but in almost half of the patients there remain sequelae in the form of arthralgia, disturbances in the function of the autonomous nervous system or dystrophy of the myocardium.

2. On account of the peculiar pathogenesis of brucellosis, the antibiotics must be used for a prolonged time. The course of treatment must consist of not less than 3 ten-day cycles (with a first cycle of treatment for 15-20 days in the case of streptomycin). To avoid untoward side effects, medium doses of the antibiotics ought to be used.

3. Intravenous vaccino-therapy during the phase of generalization, even if used in combination with 1-2 cycles of antibiotic treatment, is some what less effective than the treatment with antibiotics.

427. Udaleva, V.S., The dynamics of the development of antibiotic-resistant forms of brucellae. Antibiotiki 6 (1961) 3: 262-265. (From the Rostov Scientific Research Anti-Plague Institute.)

The author worked with (a) a highly virulent and a moderately virulent strain of Br. melitensis and (b) a highly virulent and a vaccinal strain (19-BA) of Br. abortus. These four strains were subjected to passages in Martin's broth (pH6.9), to which increasing amounts of levomycetin, chlortetracycline, tetracycline or streptomycin were added. After the cultures had been kept for 10 days, subcultures were made on plain agar and the growth on them was used for inoculation of the following series of broth media. The dose used for inoculations was always 100 million organisms. In the case of streptomycin 7-8 passages were made, in that of the other antibiotics 12-26 passages.

The conclusions reached by the author were that:

1. Through passages in media containing increasing amounts of levomycetin, chlortetracycline, tetracycline or streptomycin it is possible to produce regularly antibiotic-fast forms of brucellae. Resistance to streptomycin develops considerably quicker than that to the other three antibiotics.

2. The strains which had become resistant to levomycetin, chlortetracycline or tetracycline showed a cross resistance to the corresponding two heterogeneous antibiotics. This cross resistance was most marked in the case of the strains adapted to levomycetin, and least in those adapted to tetracycline.

3. The strains which had acquired an increased resistance to levomycetin, chlortetracycline or tetracycline, exhibited no cross resistance to streptomycin.

4. The dynamics of the increased resistance to the antibiotics tested did not depend upon the type or virulence of the brucella strains used.

428. Ambartsumian, M.S. and Sherchchenko, O.L., Measures for the prevention of brucellosis infection in a meat-preserving plant. Gigiena i sanitariia 26 (1961) 2: 80-83. (From the First Hospital and Polyclinical Association of Leninkan, Armenian SSR.)

The authors give a detailed description of the measures adopted in the Leninkan meat-preserving factory to prevent brucellosis infection of the workers. Most important among these measures were segregation of brucellosis-infected animals brought to the factory and separate handling of their carcasses by workers showing a positive brucellosis reaction; protection of the workers by a special costume including rubber boots and rubber gloves; thorough terminal disinfection of the premises used for stabling and slaughtering the infected animals and handling their meat; mass vaccination of the factory staff showing a negative brucellosis reaction two months before the mass-slaughtering campaigns with live brucellosis vaccine; health education; hospitalization and treatment of brucellosis-affected workers followed by dispensary observation.

The combined use of these and supplementary prophylactic methods led to a marked reduction of the brucellosis incidence among the factory workers. In 1951-52, before the above system of prophylactic measures was adopted, 37 persons fell ill with brucellosis, whereas in 1957-58 only 2 persons contracted the disease.

429. Prodolobov, N.F., Q-fever in Tiiman. Sovetskaia meditsina 25 (1961) 1: 29-31. (From the Tiimen Municipal Infectious Diseases Hospital).

According to the author during the last 4-5 years Q-fever attacks or even epidemics have been recorded in many oblasts and republics of the Soviet Union, partly in raions which previously did not seem affected. The author himself describes the serologically confirmed occurrence of the disease in 8 patients observed in Tiimen. Levomycetin proved effective when used for the treatment of two of the sufferers.

430. Iarovoi, L.V., Clinique, diagnosis and treatment of generalized brucellosis. Sovetskaia meditsina 25 (1960) 1: 44-49. (From the Department of Infectious Diseases of the Stavropol Medical Institute.)

The author describes the clinical course and the results of treatment in 110 patients with generalized brucellosis. Twenty-six of these sufferers had been inoculated with live brucellosis vaccine, 4 within 2 months before onset of the disease, 5 a year or more before they fell ill. Of the sufferers 102 were given specific treatment, mostly with antibiotics, partly with vaccine, which was used mostly in combination with the antibiotics. Dealing with the efficacy of the latter, the author summarized that

"Levomycetin, biomycin, streptomycin, and also tetracycline and oxytetracycline (intramuscularly administered) are fairly effective for the treatment of brucellosis in the generalized stage of the infection, whether given singly or in combination. However, good therapeutic results can be obtained only through prolonged administration of these drugs."

Treatment with chlortetracycline gave unfavorable results. Intravenous vaccine administration appeared to be useful.

431. Kravchenko, A.T. and Vasil'ev, V.N., Comparative study of the properties of two strains of the tick encephalitis virus grown in tissue cultures. 2. Properties of tick encephalitis virus strains long grown in tissue cultures. Voprosy virusologii 7 (1961) 1: 10-13. (From the D.I. Ivanovskii Institute of Virology, AMS, USSR, Moscow.)

Selected Abstracts/191

Continuing their studies with two strains of the tick encephalitis virus, to which reference has been made earlier in these reviews (see abstract #390) the authors reached the following conclusions:

1. It was demonstrated that it is possible to passage strains of the tick encephalitis virus for a prolonged time in tissue cultures derived from a susceptible organism (He La cells) or from an animal insusceptible to the infection (rabbit spleen).
2. After 8-21 passages through tissue cultures the tick encephalitis virus strains were found to exert a cytopathogenic action on the tissue culture cells and to have lost to a considerable degree their virulence for mice infected intranasally or subcutaneously.
3. This loss of virulence occurred more rapidly and markedly if tissue cultures prepared with cells from insusceptible animals were used for passage.
4. The changes of the properties of the tick encephalitis virus seem to depend both on peculiarities of the strains and on the kind of tissues used for their cultivation.

432. Pogodina, V.V. and Kolokolova, T.K., Study of the post-infectious immunity in tick encephalitis under the conditions of alimentary infection. Voprosy virusologii 7 (1961) 1: 14-19. (From the D.I. Ivanovskii Institute of Virusology, AMS, USSR, Moscow.)

According to the authors, observations in the foci of tick-borne encephalitis had shown that persons contracting this infection by the alimentary route (regardless whether or not they fell manifestly ill) became immune to the disease, as shown by the appearance of virus-neutralizing antibodies in their serum. This immunity, which lasted not less than 4 years, protected the persons in question against re-infection with the tick encephalitis virus.

For a further study of this subject the authors made comparative tests with the sera of 107 persons who had contracted the disease through the consumption of goat milk and of 153 persons who had become infected with tick encephalitis through tick-bites. The dynamics of the appearance and the titers of the virus-neutralizing antibodies in the two series were found to be practically identical.

Analogous results were obtained through ample tests in laboratory animals (white mice, monkeys and guinea-pigs) infected with the tick encephalitis virus by various routes.

An important finding was that, besides the serum, also organ extracts of orally infected experimental animals gave positive results in virus neutralization tests. The capacity of virus neutralization was found highest in the extracts from the small and large intestine,

lowest in those from the brain. The virus-neutralizing activity of the extracts made from the intestines of guinea-pigs and white mice was higher than that in the sera of the animals.

The formal conclusions reached by the authors were that:

1. In persons and laboratory animals surviving an alimentary infection with the virus of tick encephalitis appears an immunity manifested through insusceptibility to reinfection.
2. Besides the humoral factor, specific neutralizing properties of the different tissues of animals orally immunized with the tick encephalitis virus can play a definite role in the mechanism of the post-infectious immunity.
3. These mechanisms of the immunity can protect the organism against tick encephalitis infection by bites of the insect vectors or by the alimentary route.
4. The length and intensity of the immunity developing after peroral introduction of the virus are not less than the corresponding phenomena resulting from parenteral infection.

433. Stetkevich, A.A., On the influence of ultrasonic vibrations on the tick encephalitis virus. Voprosy virusologii 7 (1961) 1: 20-23. (From the Department of Microbiology of the Tomsk Medical Institute and the Tomsk Vaccine and Serum Institute.)

The author studied the action of ultrasonic vibrations on two strains of the tick encephalitis virus for the purposes of obtaining an antigen and of using the latter as a specific allergen. The conclusions he reached were that:

1. Action of ultrasonic vibrations on the tick encephalitis virus for periods up to 10 minutes as well as interrupted exposure up to 64 minutes do not lead to complete inactivation of the virus.

After exposure of an uncentrifugated virus-containing brain suspension to ultrasonic vibrations the virus titer increases at an average of one logarithmic digit; identical treatment of centrifugated suspensions does not lead to a change of the virus titer.

2. Under the combined action of ultrasound and heating, the virus becomes inactivated after vibration for 30 minutes and rise in temperature to 30°C.
3. Under the combined action of ultrasound and formol, the tick encephalitis virus becomes inactivated after vibration of a suspension containing 0.01% formol for 10 minutes.

Selected Abstracts/193

4. If 1% ethyl alcohol is added to the suspensions, the virus becomes inactivated after vibration for 10 minutes.
5. Centrifugated and alcohol-precipitated virus suspensions become more rapidly and reliably inactivated under a combined action of ultra-sound and formol than untreated suspensions.
6. Small doses of ultrasound vibrations (applied at intervals from 5 to 15 minutes) can be used for a more complete isolation of the virus and an increase of its titer in virus-containing tissue suspensions.
7. Through the combined action of ultrasound and formol, antigens with a low formol content may be obtained (0.01% instead of the ordinarily used concentration of 0.1-2.5%).

434. Goldin, R.B., Studies on experimental rickettsioses with the aid of fluorescent antibodies. 1. Use of fluorescent immune gamma-globulin for the demonstration of Rickettsia burneti. Voprosy virusologii 7(1961) 1: 37-44. (From the Order of Lenin S.M. Kirov Military-Medical Academy and the Rickettsiosis Laboratory of the Pasteur Institute of Epidemiology, Microbiology and Hygiene, Leningrad.)

Summarizing the results of his investigations, described in detail in the text of the above listed article, the author stated that

1. Obtained were two kinds of fluorescent gamma-globulins active against R. burneti, which were endowed with a high immunological specificity and intense fluorescence. For the labeling of the gamma-globulins, advantage was taken of fluorescein-isocyanate and of 1-dimethylaminonaphthalene-5-sulfochloride.
2. Treatment of fixed smears containing R. burneti with the fluorescent immune globulins proved to be a highly sensitive method, with the aid of which one could quickly demonstrate the presence of one organism per field of vision even in the presence of other microorganisms.
3. The possibility of a quick observation of R. burneti in preparations from the blood and tissues of infected laboratory animals has been demonstrated. This opens the way for further studies on Q-rickettsiosis and its diagnosis.

435. Mastiukova, IU. N. and I Aroslavskaja, N.V., On the smallpox antibodies. Voprosy virusologii 7 (1961) 1: 67-74. (From the Virus Department of the Central Institute for the Advanced Training of Physicians and the L.A. Tarasevich State Institute for the Control of Medical Biological Products, Moscow.)

Summarizing the results of elaborate studies, for which they took advantage of neutralization, hemagglutination-inhibition and complement

fixation tests, the authors stated that

1. With the aid of these reactions they had studied during a period of five years the dynamics of the rise and fall of the specific antibodies in the serum of rabbits which had been immunized with smallpox vaccines of different virulence.

2. It was established that the level of the specific antibodies and their persistence in the serum of the immunized test animals stood in close relation to the virulence of the viruses used for immunization.

3. The complete conformity of the results obtained with the above mentioned tests leads to the assumption that one and the same globulin molecule functions in the causation of the reactions.

436. Marennikova, S.S., Isolation of the smallpox virus and studies of its properties. 2. Susceptibility of laboratory animals to the virus. Voprosy virusologii 7 (1961) 1: 73-79.

As shown by the following tabulation, the author could establish differences in the reactions produced respectively in laboratory animals by the introduction of smallpox and vaccinia virus by various routes:

Species	Method of Introduction	Reaction to the virus of	
		Smallpox	Vaccinia
Rabbits	Intravenous	Absent	Generalized infection with characteristic rash
	Intracerebral	Absent	Development of encephalitis and death within three days.
	Into testicle	Almost absent	Edema and marked induration of testicle
	Into scarified skin	Almost absent	Reddening, induration of subcutis and development of pox.
	Into anterior chamber of eye	Keratitis	Marked keratitis
Guinea-pigs	Into anterior chamber of eye	Keratitis	Marked keratitis
White mice	Intracerebral	Death 2-5 days after infection	Death 2-5 days after infection
	Intravenous	Irregular deaths after administration of concentrated virus suspensions	Death even after administration of diluted suspensions.

Selected Abstracts/195

The author also observed a phenomenon of "readaptation" of the smallpox virus, owing to which the virus adapted to the chorioallantois of chick embryos regained its original properties when inoculated into the allantoic cavity.

437. Mastiukova, IU. N. and I Aroslavskaia, N.V., To the problem of the Guarnieri bodies. Voprosy virusologii 7 (1961) 1: 79-82. (From the Virus Department of the Central Institute for the Advanced Training of Physicians and the Epidemiological Department of the Gamaleia Institute of Epidemiology and Microbiology, AMS, USSR, Moscow.)

This well documented and illustrated article can be quoted by title only.

438. Levina, L.L., Differential diagnosis of Q-fever and typhoid. Vrachebnoe delo (1961) 3: 70-72. (From the Department of Infectious Diseases of the Sverdlovsk Medical Institute).

As the author describes, the clinical signs and symptoms of Q-fever may closely resemble those of typhoid. In fact, out of the 26 Q-fever patients seen in the Sverdlovsk infectious diseases department in 1958-59, twenty were admitted with the diagnosis of typhoid. Serological tests are the only means to differentiate reliably between the two diseases.

439. Latenko, IA. P., Anthrax attack resulting from careless handling of vaccine. Vrachebnoe delo (1961) 3: 122-123. (From the Department of Infectious Diseases of the Vinnitsa Medical Institute and the Sanitary and Epidemiological Station, Vinnitsa Oblast.)

The author describes a serious attack of cutaneous anthrax in a patient who, when assisting at the vaccination of sheep, had been accidentally pricked in the right upper eyelid with the needle of a syringe filled with live anthrax vaccine. The patient responded to treatment with specific serum and penicillin.

As stated at the end of the short note, the vaccine used was that of "Tsenkovskii-2."

440. Vlodayets, V.V., Some colloido-chemical properties of bacterial aerosols. Voенно-meditsinskii zhurnal (1960) 3: 82-85.

The article which deals with the problems of air-borne infection and protection against it through masks, does not lend itself to the purposes of a brief review. The experimental observations of the author were made with Staphylococcus albus.

441. List of important articles appearing in: The Natural Focality and Epidemiology of Specially Dangerous Infectious Diseases. (Collected papers of the Inter-Institute Scientific Conference on the Natural Focality and Epidemiology of Specially Dangerous Infectious Diseases held in Saratov in the 'Mikrob' Institute, 25 January-2February 1957.)  
Russian title: Prirodnaia ochagovost' i epidemiologiia osobo opasnikh infektsionikh zabolevanii. Saratov 1959. (From the State Scientific Research Institute of Microbiology and Epidemiology of South-East USSR, 'Mikrob,' MH, USSR.)

Plague:

- Pastukhov, B.N., Epizootological condition of the natural plague foci in 1954-1956 and analysis of the measures taken. Pp. 5-17
- Fedorov, V.N. and Kozakevich, V.P., Present distribution of plague in foreign countries. Pp. 18-39
- Mironov, N.P., On the paleogenesis and history of the natural plague focus of northwest Pricaspia. Pp. 40-53
- Mironov, N.P. et al., Laws governing the plague epizootics in the northwest Precaspian focus. Pp. 54-64
- Naumov, N.P. et al., Conditions of the existence and most important epizootological peculiarities of the Pri-Ural division of the natural plague focus in the central Asiatic plains. Pp. 65-84.
- Sharapkova, N. IA. et al., To the study of the epizootology and of the mechanisms of the plague focality in the Karakalpak part of the Kyzyl-Kums. Pp. 85-96
- Mamed-zade, U.A. et al., Plague epizootic in Azerbaidzhan and roads to its liquidation. Pp. 97-107
- Chen Ven-Guei et al., Some results and prospects of the study of the natural focality of plague in the Chinese peoples'republic. Pp. 108-113.
- Ian Tsin-siu, Successes in the fight against plague in the Chinese Peoples Republic. Pp. 114-116
- Sambou Sharavyn, Plague in the Mongolian Peoples Republic. Pp. 117-121
- Fedorov, V.N. et al., Plague epizootics in western Turkmenia in 1953. Pp. 122-141
- Petrov, V.S. et al., Fundamental results of the study of the plague epizootics in western Turkmenia in 1953-1955. Pp. 142-150

Selected Abstracts/197

- Mikulin, M.A. et al., Dynamics of plague infection of the gerbil fleas during the 1953-1955 epizootics in western Turkmenia. Pp. 151-160
- Usov, IA. A. et al., Plague epizootic in the rodents of the central and southern Kyzyl-Kums in 1951-1955. Pp. 161-169
- Zhovti, I.F., Some problems of the ecology of fleas in relation to their epizootological importance. Pp. 170-180
- Afanas'eva, O.V. and Mikulin, M.A., Present status of the problem of the role of the ticks of the superfamily ixodoidea in the natural focality and epizootology of plague. Pp. 181-187
- Tumanskii, V.M., The variability of the plague bacillus under natural conditions in the rodent body and importance of this phenomenon for the study of plague focality. Pp. 188-199
- Punskii, E.E., The variability of the plague bacillus in the course of the epizootics. Pp. 200-205
- Osadchaia, L.M., Characteristics of plague strains isolated in various foci and during different stages of the epizootics. Pp. 206-212
- Fedorov, V.N., Preliminary results of experimental studies of the mechanism of plague infection in camels. Pp. 213-221
- Feniuk, B.K., Fundamental tasks in the tactics, organization and methodology of the fight against rodents in the natural plague foci. Pp. 222-234.
- Bocharnikov, O.N. et al., Experience of the work on liquidation of the plague epizootics in the northwest Pricaspian focus. Pp. 235-246
- Naiden, P.E., To the problem of the technical and anti-epizootic efficacy of repeated eradication campaigns against the gerbils as carriers of plague in the Volga-Ural sandy areas. Pp. 247-262
- Karpuzidi, K.S., Theoretical premises and prospective plan of the measures for the liquidation of plague epizootics in the Volga-Ural interfluvial region. Pp. 263-275
- Donskoi, N.A., Experience of the sanitation of the Transbaikalian natural plague focus. Pp. 276-282
- Bibikov, D.I. et al., Ecological and epizootological foundations of the plan for the radical sanitation of the mountain plague focus in the central Tian-Shan. Pp. 283-292

- Aizin, B.M. et al., Epizootological efficacy of the eradication campaigns against the marmots in the Tian-Shan. Pp. 293-304
- Tinker, I.S. et al., Results and coming tasks of solving the problems of the fight against fleas as a radical method of plague prophylaxis. Pp. 305-317
- Shiranovich, P.I. et al., Experience of simultaneous destruction of wild rodents and their fleas under actual conditions. Pp. 318-327
- Shishkin, A.K. et al., Agricultural activity of man as a means of transformation of nature and its importance in re-enforcing the results of work on the liquidation of the causes of plague epizootics in the northwestern Pricaspian area. Pp. 328-336
- Lobanov, V.N. et al., Peculiarities of the pathogenesis of primary pneumonic plague and their epidemiological importance. Pp. 337-344
- Chen Ven-Guei et al., The problem of treating human plague with modern drugs. Pp. 345-347
- Pokrovskaja, M.P., On the methods of an early bacteriological diagnosis of plague. Pp. 348-355
- Ziusin, A.S., On the reactogenicity of the dry anti-plague vaccine 1-17. Pp. 356-360
- Shmuter, M.F. et al., Reactogenicity of the plague vaccine 1-17 in relation to its cell content in intracutaneous and cutaneous administration. Pp. 361-366.
- Ivanov, H.P. and Klochkova, V.K., On the optimal dosage of the dry plague vaccine 1-17. 2. Efficacy and reactogenicity of the vaccine in relation to the vaccinal dosage and the method of vaccination. Pp. 367-371
- Kalabukhov, N.I., Seasonal changes in non-hibernating rodents and their importance for variations in their susceptibility to infection. Pp. 372-386
- Mamed-Zade, U.A. et al., Seasonal changes in the susceptibility to plague of the red-tailed gerbil of Azerbaidzhan and their relation to the ecologo-physiological peculiarities of this rodent. Pp. 387-398
- Malafeeva, L.S., To the problem of the susceptibility of Merionos meridianus and M. tamariscinus to plague and its seasonal changes in natural plague focality. Pp. 399-408
- Naumov, N.P., Some results and prospects of the medical zoology of vertebrates. Pp. 409-421

## Selected Abstracts/199

IUshchenko, G. B., Peculiarities of the epizootology of pseudo-tuberculosis in the rodents under urban conditions. Pp. 573-579

### Tularemia

Olsuf'ev, N.G., World distribution of tularemia, its epidemiology and prophylaxis. Pp. 422-436

Dunaeva, T.N., Present condition of the study of the epizootology of tularemia in the USSR. Pp. 437-451

Kondrashkin, G.A. and Kuznetsova, L.I., Seasonal changes of the ecologo-physiological peculiarities of the water-rat and its susceptibility to tularemia. Pp. 452-465

Act of experimental confirmation by a commission of the possibility of prolonged carriage of tularemia bacilli by the water-rats. Pp. 580-589

### Brucellosis

Vershilova, P.A. et al., On the possibility of a natural focality of brucellosis. Pp. 466-475

Rementsova, M.M., Supplementary sources of brucella infection. Pp. 476-485

Taran, I.F. et al., Study of the role of wild rodents in the epizootology of brucellosis of the sheep-goat type. Pp. 486-496

Zamakhaeva, E.I. et al., Study of brucella infection of the ticks in foci of the sheep-goat type. Pp. 497-501

Balandin, G.A. et al., On cutaneous vaccination against brucellosis. Pp. 502-513

Lokhov, M.G., Epidemiological efficacy of brucellosis vaccination. (An account of observations in the Saratov oblast.) Pp. 514-529

### Cholera

Korobkova, E.I., World distribution of cholera at the time of the 7th pandemic. Pp. 530-544

Nikonov, A.G., Pathogenesis and diagnosis of prolonged carriage of cholera vibrios by convalescents. Pp. 567-572

General surveys

- Galuzo, I.G. and Rementsova, M.M., Investigations on the natural focality of human diseases in relation to the regional peculiarities of the Kazakhstan. Pp. 545-551
- Rositskii, B., Investigations on diseases with natural focality in Czkhoslovakia. Pp. 552-558
- Parnas, IU., Investigations on the natural reservoirs of anthroozoonoses in Poland. (Informative report.) Pp. 559-563
- Liakhmaierova, IA. V., Short information on the investigations of diseases with natural focality in Poland. Pp. 564-566
442. Alekseev, A.N. et al., Apparatus for the fixation, sorting and counting live insects. Meditssinskaia parazitologiya i parazitarnye bolezni. 30 (1961) 2:229-30.
- The author of this short note describes and illustrates with a photograph and a schematic drawing an apparatus to be used for the purposes mentioned in the title. Counting was done with the aid of an electro-mechanic meter.
443. Important articles quoted in a reference list inserted in the Meditssinskaia parazitologiya i parazitarnye bolezni 30 (1961) 2:232-242.

Ticks

- Arkhangelskii, D.S. et al., The ixodes tick D. dagestanicus--a possible vector of Q-fever. Izvestiya Akademii nauk Kazakhskoi SSR, seria med. i fiziol. Alma Ata. (1960) 2 (14): 16-20.
- Emchuk, E.M. and Glushan, E.F., On the role of the ixodes ticks in a natural brucellosis focus. Problemy parazitologii. Trudy III nauchnoi konferentsii parazitologov USSR, Kiev (1960) :309-310.
- Kezarev, I.P., Role of the ticks in the maintenance of Q-fever foci. Ibidem, p. 325.
- Lvov, D.K., Study of the state of immunity of the population to tick encephalitis in two districts of the Krasnoiarsk krai. Thesis, Moscow (1960).
444. Nechinenni, D.K. and Kartashev, M.V., Experience on the use of aerosols in the fight with ticks in the open. Problemy parazitologii. Trudy III nauchnoi konferentsii parazitologov USSR. Kiev (1960): 341-344.

Selected Abstracts/201

445. Kiselev, A.P. and Kozhevnikova, V.F., Maximally permissible virulence and reactogenicity of smallpox vaccine. (Authors' Report.) Zh. mikrobiologii, etc. 32 (1961) 4: 88.  
(From the Kiev Institute of Epidemiology and Microbiology.)

The authors of this note reported to have prepared and tested (in man as well as in animals) 22 series of dry smallpox vaccine. The virulence of each series was assayed in two guinea-pigs with the aid of the corneal method and in two rabbits by the intracutaneous method. Through passages from calves to rabbits, from the latter to sheep and back to calves the virulence of the vaccine could be gradually increased. A comparison of the results showed that the vaccine lots with a higher degree of virulence produced a higher percentage of positive results and increased reactions after revaccination, and also a higher temperature reaction in those inoculated for the first time.

As the authors postulated, the highest permissible virulence of smallpox vaccine corresponded to a titer of 1:80,000 according to Hines and to the index 36 of Groth.

446. Balashov, V.E., Experimental data on the changes caused in the body through the action of the insecto-fungicide mercuran. Vrachebnoe delo (1961) 4: 115-119.  
(From the Department of Industrial Hygiene of the Kiev Medical Institute.)

Mercuran, which is widely used in the USSR in farming work, is a mixture of 2% ethylmercuriochloride and 12% of the gamma isomer of hexachlorocyclohexane. Experimenting with this compound on white mice and rabbits, the author reached the following conclusions:

1. Mercuran is a highly toxic substance.
2. The changes produced through mercuran poisoning consist of circulatory disturbances, dystrophic processes in the parenchymatous organs, inflammatory and sometimes necrotic alterations in the liver, the kidneys and the brain.

To prevent mercuran poisoning, attention has to be paid to its initial--changes in the blood picture, appearance of mercury in the urine.

447. Baroian, O.V. and Serenko, A.F., Smallpox outbreak in Moscow in 1959-1960. Zh. mikrobiologii, etc. 32 (1961) 4: 72-79.  
(From the Ivanovskii Institute of Virusology, AMS, USSR.)

The outbreak of smallpox described in this paper was due to the arrival of a plane passenger from Delhi (India) on 22 December 1959. He had been vaccinated against smallpox 2 weeks before his departure

for India (date ?) but had not developed a reaction. Since, when he fell on 23 December, he complained of pains in the abdomen, the presence of appendicitis or cholecystitis was supposed. This diagnosis was given up in favor of that of exanthematic typhus owing to the appearance of a skin rash on 24 December. However, when on December 25-26 skin hemorrhages became manifest, the presence of a toxicosis due to the administration of antibiotics was suspected and this diagnosis was confirmed on admission of the patient to the infectious diseases ward of the Botkin hospital on 27 December. He died two days later (December 29).

At autopsy on the day of death bipolar-stained bacilli were detected and consequently the presence of septicemic plague was considered. Though this diagnosis was not confirmed, the dead body was cremated with all due precautions.

From 11 January 1960 smallpox patients began to appear in Moscow these were from among those who had had the contact with the patient--in his family and in the hospital. It was only then that the true nature of his illness was recognized.

Up to 11 February a total of 46 smallpox attacks was recorded. Three of the patients succumbed to the disease. Out of the 46 patients one suffered from purpura variolosa, 2 from confluent smallpox, 3 from the disseminated form of the disease, 37 from variolosis, while 3 showed no skin manifestations. The total number of contacts amounted to 960 in the city and 1,600 in the hospital. It was noted in this connection that among 622 persons who had had contacts with manifestly ill smallpox patients, 97 were suspected to have contracted the disease, while the diagnosis was fully confirmed in 28. Out of 168 persons who had been in contact with smallpox-suspects, only one was definitely found to have contracted the infection.

The drastic action taken to cope with this outbreak consisted of (a) the isolation of 960 contacts to 37 of the patients in the city, begun on 16 January, and confinement of the hospital inmates; and (b) mass vaccination of the city population which commenced on 19 January. Up to 3 February 6,372,376 persons were inoculated and second vaccinations had been given to 71,463 persons. The reactions to the inoculations in a group of 1,621 persons were as follows: (See table on p. 204)

Examinations of the sera of 255 persons of various age groups taken before the vaccination campaign showed the presence of specific antibodies in only 52%. The percentage of positive reactions was, however, 95% in children of 1-5 years, not above 20-22% in persons over 20 years.

The conclusions drawn by the authors were that:

1. The smallpox outbreak in Moscow in 1959-1960 was due to the failure to diagnose the disease in a patient who had become infected in one of the foci of South-East Asia.

Selected Abstracts/203

<u>Age in Years</u>	<u>Total Vaccinated</u>	<u>Stormy Reactions</u>	<u>Percentages of</u>		<u>No Reactions</u>
			<u>Marked Reactions</u>	<u>Slight Reactions</u>	
up to 10	43	49	21	19	11
10-20	109	23	25	37	15
20-30	342	32	27	26	15
30-40	436	37	28	24	11
40-50	283	47	30	12	11
50-60	249	55	17	14	14
over 60	159	62	16	13	9
<hr/>					
Totals	1621	42	25	21	12

2. Though the form of the disease (purpura variolosa) in this patient was difficult to recognize it has to be noted that those attending him failed to pay attention to his history--arrival from a smallpox focus.
  3. Most infective were the patients with marked clinical features of smallpox, while in the case of variolosis the contacts hardly caught the infection.
  4. The anti-epidemic measures, consisting in systematic isolation of all contacts, disinfection of the foci and mass vaccination of the people, were highly effective and led to a complete liquidation of the outbreak in an extraordinarily short time.
  5. Sampling studies of the vaccinal process in the inoculated persons and laboratory examinations of their sera showed a considerable lowering of the herd immunity of the population of Moscow. Since this lowering of the collective immunity was noted mainly in the older age groups, it is necessary to consider changes in the smallpox vaccination scheme.
448. Vashkov, V. I. and Shnaider, E.V., Insecticidal properties of dimethyl-dichlorovinylphosphate (DDVF). Zh. mikrobiologii, etc. 32 (1961) 4: 130-136.  
(From the Central Scientific Research Disinfection Institute.)

The authors studied the insecticidal action of dimethyl-2,2-dichlorovinylphosphate (used abroad under other designations) on domestic flies, bed-bugs, rat-fleas and cockroaches. The compound was found to be more active against the first mentioned insects than against the others. Its residual action did not exceed 48 hours but could be prolonged by the admixture of polychlorpinene. To combat fleas, lice and bedbugs, amounts of 1 gram of the insecticide had to be used per square meter of the surfaces treated.

449. Viazhevich, V.K., On some peculiarities of cowpox in man. Zh. mikrobiologii, etc. 32 (1961) 4: 149.  
(From the Novosibirsk Oblast Sanitary-epidemic Station.)

As a result of a major outbreak of cowpox in the cows of four localities of the Novosibirsk oblast in 1958, out of 83 milk maids, who worked under rather unsanitary conditions, 23 contracted the infection. The attacks were of so benign a character that only two of the patients sought medical aid. Affected were mainly older persons, who presumably were little immune against smallpox. Smallpox inoculations administered at the time of the outbreak proved positive in the group of the patients while the milkmaids, who had remained healthy, showed negative reactions.

The conclusions of the author were that:

1. The cowpox infections in the milkmaids were the result of contact with diseased animals under unsanitary conditions and of an insufficient immunity against smallpox.
  2. The disease in the patients appeared in the form of local affections, mainly on the wrists, ran as a rule a slight course and lasted a short time.
  3. Appearance of cowpox in human patients indicates an insufficient immunity against smallpox and calls for an intensification of vaccine administration, in the first line among those immediately attending the cattle.
  4. To prevent the disease, co-operation among the veterinary and medical personnel is essential, so as to detect the presence of the infection at an early stage.
450. Zuev, V.A., Report on the conference dealing with the results of liquidating the localized smallpox outbreak in Moscow in 1960. Zh. mikrobiologii 32 (1961) 4:153-154.

The following of the 14 reports rendered at this conference in April 1960 deserve attention:

Selected Abstracts/205

- a) S.S. Marennikova (Moscow Mechnikov Vaccine and Serum Institute), in a paper entitled "Some problems of the prevention of the importation and spread of smallpox," dealt not only with these questions but also with the timely clinical and laboratory diagnosis of the disease, adequate quarantine measures and health education.
- b) A.V. Eremian (2nd Moscow Clinic of Infectious Diseases and Clinic of the Ivanovskii Institute of Virusology) dealt with the "Clinical peculiarities of smallpox in Moscow" (no details).
- c) S.S. Marennikova and associates rendered a report on "The methods of the laboratory diagnosis of smallpox and their comparative value according to the materials of the 1960 outbreak." As shown by the examination of 108 patients, the most sensitive method was the demonstration of Guarnieri bodies in tissue cultures.
- d) The same conclusion was reached by A.D. Altshstein et al. (Polio-myelitis Institute, AMS, USSR) in a report "Study of the properties of the smallpox virus and smallpox vaccine strains grown in tissue cultures." The authors found that in tissue cultures marked differences existed between the smallpox strains and the vaccinal strains regarding the character of the inclusion bodies, hemadsorption and its specific inhibition, cytopathogenic action and hemagglutination in the cultural fluid.
- e) In a paper entitled "The use of fluorescent antibodies for smallpox diagnosis" F.M. Kirillova and coworkers stressed the usefulness of this method for the early and rapid diagnosis of smallpox.
- f) Studies on the smallpox virus and the cell reactions produced by it were made with the aid of the electron microscope by A.F. Bykowski and associates ("Electronoscopic studies of the smallpox virus in ultra-thin sections").
- g) The results of studies of the anti-hemagglutinins in the sera of persons vaccinated against smallpox were recorded by S.S. Marennikova et al. Of the 492 sera examined 92.6% contained anti-hemagglutinins at titres ranging from 0 to 80. The titres in the sera of smallpox patients or convalescents were considerably higher--a feature of some diagnostic importance.
- h) S.S. Marennikova and coworkers reported that out of 42 persons in close contact with smallpox patients 13, who received prophylactic of specific gamma-globulin, remained healthy, whereas among the 29 not so protected persons 13 fell ill with smallpox. The gamma-globulin also gave satisfactory therapeutic results and proved useful in some forms of post-vaccinal complications.

- i) O.A. Khondkarian and associates (Neurological Institute, AMS, USSR) reported on "The peculiarities of affections of the nervous system in the post-vaccinal period." In all 22 persons under observation complications appeared after revaccination and most of them were over 20 years old. None of them showed features of paresis or paralysis.
- j) G.IA. Svet-Moldavskii and I.A. Svet-Moldavskaia (Tarasevich Control Institute and Poliomyelitis Institute, AMS, USSR) recorded experimental data on the study of post-vaccinal encephalitis.

451. Morozov, M.A. and Konstantinova, V.I., The interrelation between the virulence and the immunogenicity of vaccinal smallpox strains. Zh. mikrobiologii, etc. 32 (1961) 4: 79-84.  
(From the Gamaleia Institute of Epidemiology and Microbiology, AMS, USSR.)

Making comparative tests with (a) a dry dermovaccine manufactured in the Gamaleia Institute and (b) a dry ovovaccine prepared in the Mechnikov serum and Vaccine Institute, the authors came to the following conclusions:

1. Both vaccines produced in rabbits virus-neutralizing antibodies.
  2. The immunogenic properties of the vaccines were directly proportional to their virulence: the higher the virulence was, the higher was the titer of the virus-neutralizing antibodies and the better were the results of vaccination in man.
  3. Vaccine lots stored for one year can be used for prophylactic purposes, if they produce in a dilution of 1:1,000 in animals tested according to the method of Clamette-Guerin not less than 5 typical pustules.
  4. Out of the two vaccines tested, that manufactured in the Gamaleia Institute proved to be more virulent and immunogenic, while the ovovaccine of the Mechnikev Institute appeared to be unsuitable for vaccine prophylaxis in man.
451. Marennikova, S.S. et al., On the treatment of smallpox patients with anti-smallpox gamma-globulin. Zh. mikrobiologii, etc. 32 (1961) 4: 84-87.  
(From the Moscow Mechnikov Vaccine and Serum Institute, the Second Clinical Infectious Disease Hospital and the Clinic, of the Ivanovskii Institute of Virusology, AMS, USSR.)

Referring to an earlier publication of theirs (see Marennikova et al., Production and experimental study of anti-smallpox gamma-globulin,

Selected Abstracts/207

Voprosy virusologii 3 [1958] 6:338-341) the authors recorded good results obtained through treatment of 4 smallpox patients (two in the prodromal stage and two showing the features of a manifest attack of medium servery) with specific gamma-globulin obtained from the sera of hyperimmunized sheep or calves.

Further trials of this therapeutic method are recommended.

452. Dzharylgazov, S., On the endemicity of cholera in China. Zh. mikrobiologii, etc. 32 (1961) 4:123-127.

The author confirms that cholera is not endemic in China and that the disease has been absent from that country since 1949.

453. Cherchenko, I.I., Brucellosis infection in the raions of the extreme north. II. Epidemiological characteristics of a reindeer brucellosis focus. Zh. mikrobiologii, etc. 32 (1961) 4: 118-123.

(From the Moscow Order of Lenin Sechenov Institute and the Gamaleia Institute of Epidemiology and Microbiology, AMS, USSR.)

Observations in a collective reindeer farm in the Iakutsk ASSR (easter Siberia), where the presence of brucellosis in the herds of these animals had been established through previous investigations, led the author to the following conclusions:

1. Reindeers affected with brucellosis are apt to serve as the source of human infection. In the farm under observation laboratory evidence of brucellosis was found in 46 out of 189 inhabitants.
2. Infection of man in the reindeer brucellosis foci is due mainly to contact with diseased animals. Apparently, however, a role is played also by alimentary infection (consumption of raw reindeer meat) and by respiratory infection, rendered possible by the preparation of the furs of the animals and their use as garments, bedding, etc.
3. The infection contracted from the reindeers rarely leads to clinically manifest brucellosis in man.

Discussing the problems of prophylaxis, the author maintained that in view of the comparatively benign character of the disease in man and the presence of a large group of individuals with positive allergic and serological reactions, human anti-brucellosis vaccination not indispensable. Drastic measures to deal with the presence of the infection in the reindeer herds were indicated, but were difficult to implement.

Tsvetkova, E.M., Therapeutic action of monomycin in experimental tularemia. Antibiotiki 6 (1961) 4:327-330.

The author established through in vitro tests that monomycin in a concentration of 25 units/ml completely inhibited the growth of both the virulent tularemia strain 503 and its streptomycin-fast mutant.

To test the efficacy of monomycin in vivo, the author experimented with white mice and with guinea-pigs, which were subcutaneously infected with B. tularensis in dosages of 100 organisms. Treatment of the guinea-pigs was commenced on the 3rd day after infection (when their temperature began to rise) and was continued for ten days. All test animals received the drug subcutaneously twice per day, the daily doses being 4,000 units in the case of the mice and 50,000 units for the guinea-pigs.

As shown by the table inserted below, all test animals survived and most of them were found free from tularemia bacilli when sacrificed and examined 30-35 days after infection.

<u>Strain</u>	<u>Daily dose</u>	<u>Tested</u>	<u>White mice Survived</u>	<u>Free from infection on 35th day</u>
Virulent str.	4,000	18	18	15
503	4,000	20	20	16
<u>Guinea-pigs</u>				
Virulent str.	50,000	5	5	5
503	50,000	5	5	5
Streptomycin-fast mutant	50,000	5	5	5

Emphasizing that (a) monomycin was therapeutically active not only against a virulent tularemia strain but also against its streptomycin-fast mutant and (b) it was not toxic for guinea-pigs, the author recommended the antibiotic for clinical trials.

454. Gusbits, S.V., On the evolution of droplet infections in children. (Some remarks on two publications by V.I. Ioffe and co-authors in the Zh. mikrobiologii, etc. 1958, No. 6). Sovetskoie zdравo-okhranenie 20 (1961) 5: 56-58.

This review, which deals with diphtheria and scarlet fever infection, is mentioned by title only.

Selected Abstracts/209

455. Terskikh, I.I. et al., Studies of bird ornithosis and its natural focality. Voprosy virusologii 6 (1961) 2:131-135.

Summarizing the results of their observations, the authors stated that:

- a) During the period of 1954-1955 the presence of the ornithosis virus was detected in 5 species of wild water birds hitherto not known to suffer from the infection, which had been collected near the Caspian Sea.
- b) Pigeons, Peking ducks, parrots and canary bids may suffer from a long-lasting latent form of ornithosis with periodical exacerbations, leading to spread of the infection.
- c) Mammals (particularly wild rodents, 6 species of which were found susceptible to ornithosis infection) may play a role in the creation and maintenance of natural ornithosis foci.
- d) Arthropods, especially ground beetles and ixodes ticks, might serve as vectors of the infection.

456. Laboratory studies on the virus of tick-borne encephalitis and allied infections. Voprosy virusologii 6 (1961) 2 (Quoted by title only):

Andzhaparidze, O.G. and Bogomolova, N.N., Interaction between the virus of tickborne encephalitis and sensitive cells in vitro. I. Sensitivity of various cell cultures to the virus. (From the Moscow Scientific Research Institute of Virus preparations.) Pp. 136-143

Semenov, B.F. et al., Multiplication of the tick-borne encephalitis virus in primary cultures of pig embryo kidney epithelium cells. (From the Moscow Institute of Virus Preparations.) Pp. 143-146

Fedorov, IU. V., Studies on a virus strain isolated from a horse in the course of its immunization against tick-borne encephalitis. (From the Tomsk Vaccine and Serum Institute.) Pp. 147-149

Trukhmanov, B.G. and Rodiukova, E.N., On the presence of antibodies in the blood of foals and in the milk of mares immunized with ti tick-encephalitis virus. (From the Tomsk Vaccine and Serum Institute.) Pp. 149-151

Bannova, G.G., On the use of tick-encephalitis virus grown in chick fibroblast tissue cultures as a complement-fixing antigen.  
(From the Ivanovskii Institute of Virusology, AMS, USSR.)  
Pp. 151-156

Kaverin, N.V., Utilization of tissue cultures for the preparation of vaccines against Venezuelan and western American equine encephalomyelitis.  
(From the Ivanovskii Institute of Virusology, AMS, USSR.)  
Pp. 156-160

457. Mastiukova, I.U.N. et al., Study of the results of smallpox vaccination. Voprosy virusologii 6 (1961) 2:189-196.  
(From the Moscow Institute of Epidemiology, Microbiology and Hygiene and the Sanitary-Epidemiological Station of the Sverdlovsk Raion, Moscow.)

Summarizing the results of their elaborately documented observations, the authors made the following statements:

1. In the course of the smallpox vaccination campaign in Moscow in January 1960 revaccinations were made of 1,277 persons aged 8-65 years after blood had been taken from them in order to determine the antigen level in their sera with the aid of hemagglutination inhibition tests.

The percentage of positive vaccinal reactions (takes) in the various age groups varied from 38.2 (school children of 8 to 11 years) to 83.7% (persons over 50 years) with a mean of 66.6%.

2. It was found that the frequency of takes and the intensity of the specific reactions depended upon (a) the interval of time elapsed between the previous vaccination and the revaccination (40.7% takes in persons vaccinated one year ago, as against 82.1% in persons vaccinated more than 30 years ago); (b) the level of specific antibodies in the serum of the vaccinated (the highest number of takes--74.1%--being observed in persons with no antibodies or a low antibody titer); (c) the virulence of the various vaccines or vaccine batches used (vaccines with high titers gave 75.8% takes, those of lower virulence, if used in the same groups, only 47.2% takes).
3. The high percentage of takes (40.7%) in the group vaccinated one year ago was evidently not the result of a rapid loss of immunity but was due to the previous use of little virulent vaccines. Thus the problem of the loss of immunity could be solved only through the use of highly virulent vaccines both for the initial vaccination and for revaccinations made at different intervals of time.

As the authors added, the question how far the level of humoral antibodies indicates an insusceptibility to smallpox infection also needs further studies, conducted with the aid of experiments in monkeys.

Selected Abstracts/211

458. Avakian, A.A. et al., Methods to improve the laboratory diagnosis of smallpox. Voprosy virusologii 6 (1961) 2:196-203.  
(From the Laboratory of Virus Morphology and Electron Microscopy of the Institute for the Study of Poliomyelitis, AMS, USSR.)

As the authors established, it is possible to reveal with the aid of the fluorescent antibody technique within 1-2 hours the presence of specific antigens in smears and impression films made from the skin lesions of smallpox patients. The method also proved useful for the rapid demonstration of the presence of the smallpox virus in tissue cultures and for the serological identification of the virus.

As the authors also found, it was possible to differentiate between smallpox vaccinia viruses with the aid of trypsinized monkey kidney tissue cultures, in which differences in the rate and pattern of the cytopathogenic action and of the hemagglutinin titers in the culture fluids became manifest.

459. Marennikova, S.S. and Maltseva, N.N., The use of agar precipitation tests on slides for smallpox diagnosis. Voprosy virusologii 6 (1961) 2:204-207.  
(From the Mechnikov Vaccine and Serum Institute, Moscow.)

The authors described a modification of the agar precipitation test on slides for the detection of antigens of mammalian pox viruses. Using a high-titre anti-vaccinia serum raised in rabbits for their tests, they obtained positive results not only with smallpox cultures and materials from smallpox patients, but also with alastrim, vaccinia and cowpox cultures.

Tests with chickenpox and herpes cultures and with materials from patients suffering from these infections gave negative results.

The authors lauded the simplicity and expediency of their test, results of which could be read after 4-5 hours. Though only group-specific results were obtainable, in the opinion of the authors their method was of value for the rapid laboratory diagnosis of smallpox.

460. Polozov, A.I. and Pautov, V.N., To the problem of the variability of Rickettsia burneti. Voprosy virusologii 6 (1961) 2:210-212.

The authors (a) made comparative tests with a virulent culture of R. burneti (strain Greta) and a variant of this strain obtained through 61-64 passages in embryonated chicken eggs and (b) studied the virulence of the Greta strain after it had been stored for prolonged periods of 4°C in different vehicles (lyophilized and ordinarily dried cultures, unopened embryonated eggs, suspensions from such eggs or the organs of infected guinea-pigs preserved in glycerol).

The modified strain obtained through repeated passages in embryonated eggs showed features of a lessened virulence, causing less marked infiltrations at the site of infection than the original strain and regularly producing fever in the infected guinea-pigs only when administered in high concentrations. Complement fixation tests with the sera of animals infected with the passage strain were positive at lower titers than was the case in the sera of the animals infected with the original strain. Five times repeated passages through intratesticularly infected guinea-pigs or passages through ticks failed to reverse these modified properties.

Administration of the strains produced through long storage caused in guinea-pigs a symptom-less form of the disease. However, 1-2 passages through embryonated eggs fully restored the virulence of these modified strains.

Thus, as the authors concluded, "R. burneti (strain Greta) is capable of permanently altering its properties into a new variant, or may temporarily lose its pathogenic features for guinea-pigs."

461. Pautov, V.N., To the problem of prolonged storage of R. burneti cultures. Voprosy virusologii 6 (1961) 2:213-215.

The authors concluded from elaborate observations that:

"The method of lyophilisation of 10-50% suspensions from the vitelline membranes of infected chick embryos insures a long preservation of R. burneti cultures (as far as observed up to 8-10 years). After 1-2 passages through embryonated eggs the properties of the preserved strains are identical with those of the original strain."

462. Pautov, V.N., Some data on the survival of Rickettsia burneti on objects of the external environment. Voprosy virusologii 6 (1961) 2: 217-219.

To test the vital resistance of R. burneti, the author used 20% and 50% suspensions of cultures in embryonated eggs, 1 ml or 2.5 ml amounts of which were put on sterile specimens of dry or moist earth, cotton or woolen fabrics and stainless steel. The contaminated objects were dried for 20 hours at 18°C and then kept in the dark in hermetically sealed glass jars at 4° or 20°C. To assess the survival rate of the organisms, phosphate buffer (pH 7.4) was added and the fluid obtained after shaking for 3 hours and centrifugation was used for titration tests in intraperitoneally infected guinea-pigs. Assessments were made after 10-18 days preservation at 20°C and after 3, 6 and 12 months preservation at 4°C. It was found that

"with exception of moist earth in all specimens kept at 20°C within 10-20 days the concentration of the rickettsiae diminished 10-100 times, reaching a level of  $10^{-8}$ - $10^{-9}$  ID<sub>50</sub> (as compared to the original

Selected Abstracts/213

concentration of  $10^{-9}$ - $10^{-11}$  ID<sub>50</sub>). After 30-90 days the concentration diminished  $10^4$ - $10^6$  ID<sub>50</sub>. The longest survival was noted on moist earth, on which at 20° even within 180 days the concentration became lowered only 10-100 times. At 4°C the concentration of the rickettsiae on steel, cotton and woolen fabrics became lowered within 3-6 months 10-100 times, after 12 months  $10^4$ - $10^5$  times."

In accordance with these findings, the author pointed to the danger of a contamination of garments, utensils and other objects in laboratories where rickettsia egg cultures were handled.

463. Rzhakova, O.E., Production of diagnostic sera for complement fixation tests in tick-borne spring-summer and Japanese encephalitis. Voprosy virusologii 6 (1961) 2:238-240.  
(From the D.I. Ivanovskii Institute of Virusology, AMS, USSR, Moscow.)

In order to produce sera for complement fixation tests for the diagnosis of tick encephalitis and Japanese encephalitis, the author infected 4-days old white rats intracerebrally with 0.03 ml amounts of 10% suspensions of the brain of white mice containing the viruses in question. On the fourth day after infection the young rats were killed with ether, their brains were removed aseptically and kept frozen at -20°C.

If found sterile, a 10% suspension of the brain was made in normal saline and mixed in a proportion of 3:1 with a stimulator. The latter was prepared by mixing by weight one part lanolin, 3 parts of vaseline, oil and 0.002 parts of dry BCG vaccine. The mixture was boiled in the water bath and, after cooling, added to the virus-containing suspensions.

White rats were intraperitoneally injected with 1 ml doses of the suspensions, using 10-15 animals for each. Blood was taken from their hearts on the 17th, 30th and 40th days after injection in order to ascertain the optimal time of bleeding.

The sera were freeze-dried and kept at 4°C.

Complement fixation tests were made with these sera and with antigens obtained from the brain of white mice and chick embryos infected with the strains under test (see Rzhakhova, Voprosy virusologii, 1958, 3: 178).

Summarizing her results, the author stated that:

1. The above described method of preparing diagnostic sera for the complement fixation tests was adequate.

2. The highest titers of complement-fixing antibodies were found in the sera on the 17th day after immunization.
  3. Cross complement fixation tests showed (a) antigenic differences between the single Japanese encephalitis strain tested and the three tick encephalitis strains examined; (b) an antigenic similarity between the two tick encephalitis strains from eastern Siberia; (c) an incomplete antigenic relationship between these two strains and the tick encephalitis strain isolated in western Siberia.
464. Fikhman, V.A. and Priadkina, M.D., A method of immersion microrefractometry for the direct determination of the relation of living and dead cells in live plague vaccines. Zh. mikrobiologii, etc. 32 (1961) 3: 60-64.  
(From the Tarasevich State Institute for the Control of Medical and Biological Preparations.)

The authors used the method of microrefraction for the distinction of live and dead bacterial cells, described by one of them (see Fikhman, Zh. mikrobiologii, etc. 30 [1959] 8:100-104) for the sampling of 40 batches of live plague vaccines, prepared in the various antiplague institutes, and also for the examination of 15 samples of the vaccinal plague strains EV, 1 and 17.

For the former purpose they dissolved the specimens of the dry plague vaccines by pouring the required amounts of sterile normal saline into the ampoules. The suspensions thus obtained were serially diluted with normal saline. Analogous dilutions were also made from suspensions of the plague cultures under test.

In order to make also colony counts one ml amounts of the highest serial dilutions ( $10^{-6}$ ,  $10^{-7}$ ,  $10^{-8}$ ) were evenly distributed on agar plates containing 1% of lysed blood (pH 7.2). Counts were made after the plates had been incubated for 5 days at 28°C. At the same time the total bacterial content of the specimens was determined in an optical comparator or by direct counts in a chamber.

For the microrefractometric determinations thin layers of liquefied 22% gelatin gel were spread out on slides. Then a drop of the suspension under test, diluted 1:10, was put on a coverglass and this was carefully placed on the solidified but still moist gel in an inverse position and gently pressed down.

When such preparations were examined under an anoptric microscope, the living plague bacilli appeared in the form of empty bacterial bodies surrounded by a narrow luminescent cell wall, while the dead cells showed a uniform luminescence.

Selected Abstracts/215

As shown in two tables, the results of microrefractometric examinations compared favorably with those obtained by colony counts. The authors recommended therefore the expedient new method devised by one of them for actual work.

465. Iaroshenko, V.A., Comparative evaluation of the methods used for the detection of pathogenic cocci in the air of hospital premises. Zh. mikrobiologii, etc. 32 (1961) 3: 64-68.  
(From the Ukrainian Institute of Communal Hygiene.)

Quoted by title only.

466. Avanian, L.A. and Gubina, N.E., Action of iron on the growth and virulence of the plague bacillus. Zh. mikrobiologii, etc. 32 (1961) 3: 92-97.  
(From the Scientific Research Anti-Plague Institute of the Caucasus and Transcaucasus, MH, USSR, Stavropol.)

The authors exhaustively report on in vitro and in vivo tests to study the influence of iron salts on the plague bacillus. They used for the former purpose Mohr's salt ( $\text{Fe SO}_4 \cdot (\text{NH}_4)_2 \text{SO}_4 \cdot 6 \text{H}_2\text{O}$ ), for the latter ferrous sulfate ( $\text{Fe SO}_4 \cdot 7 \text{H}_2\text{O}$ ). They summarized their results by stating that

"1. An increased iron content in (liquid or solid) peptone-broth media plays an important role in the nutrition of P. pestis; the iron in the media is intensively utilized by the organisms, increases the catalase activity and facilitates the growth of isolated bacterial cells with a typical morphology.

"After sterilization of the iron-containing media there was no need to add growth stimulators like blood or sodium sulfite. This makes the iron-containing media particularly useful for field work and may be of importance for the bacteriological diagnosis of plague.

"2. The virulence of the weakly virulent plague strains 133 and 138 for guinea-pigs became markedly increased through administration of  $\text{Fe SO}_4 \cdot 7 \text{H}_2\text{O}$  to the test animals. After 3-5 passages through guinea-pigs treated in this manner the increased virulence of the strains was retained for a long time."

467. Zhalko-Titarenko, V.P., Construction of a variable volume chamber for the study of bacterial and virus aerosols. Zh. mikrobiologii, etc. 32 (1961) 3:129-135.  
(From the Kiev Institute of Epidemiology and Microbiology.)  
This illustrated article can be quoted by title only.

468. Cherchenko, I.I., Brucellosis in the raions of the extreme north. I. On brucellosis in the reindeer. Zh. mikrobiologii, etc. 32 (1961) 3:135-139. (From the Department of Epidemiology of the First Moscow Sechenov Department of the Gamaleia Institute of Epidemiology and Microbiology, AMS, USSR.)

As can be gathered from the literature quoted by the authors and from the records of their own observations in northern Iakutia, brucellosis is widely spread among the reindeers of many districts of northern Siberia, sometimes half of the animals examined in individual herds or even more proving infected. Presumably imported cattle served as the original source of the infection.

469. Dodonov, V.N., Review of the book by I.R. Stepanov: Desinfektsia, desinseksia i deratizatsia. Lektsii I-VIII. Izdanie tsentralnogo instituta usovershestvovaniia vrachei, Moscow (1960) (Lectures on Disinfection, Disinsectation and Deratization). Zh. mikrobiologii, etc. 32 (1961) 3:143-145.

Quoted by title only.