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TRIP TO SOVIET UNION, 1961-1962

OK

Report on a Visit to Several Meteorological and Oceanographical
Research and Teaching Institutions in the Soviet Union --

May 28 to June 29, 1961.

The following institutions were on my itinerary: Institute of Physics of the Atmosphere (Moscow), Central Forecasting Institute (Moscow), Institute of Applied Geophysics (Moscow), Moscow State University, University of Leningrad and Main Geophysical Observatory (Leningrad). I was able to visit all but one of these. Upon my arrival in the Soviet Union, Professor Obukhov, the director of the Institute of Physics of the Atmosphere, suggested that I visit the University of Tashkent in Uzbekistan at the end of June, a time when most of the scientists in Moscow and Leningrad would be on vacation. The Russians are proud of their achievements in Central Asia and regard Tashkent as something of a showplace. I accepted Obukhov's invitation after being assured, somewhat reluctantly, that my wife and I would be permitted to visit the ancient cities of Samarkand and Bokhara as well. As it turned out, our visit to Central Asia was one of the high points of our trip, although not altogether for scientific reasons.

It should be said at once that while four months of study of the Russian language may enable one to pick his way painfully through a scientific article it does not permit him to engage in a conversation more abstract than ordering a meal. My sample of Russian scientific life and work was therefore biased by the accident of fluency in English or, to a lesser degree, German or French, among my Russian colleagues. The Soviet Academy did supply me with an interpreter-guide, Miss Tamara Ivanovna Galina of the Institute of Physics of the Atmosphere, but her linguistic training was humanistic rather than scientific and proved to be inadequate for scientific discussions.

Institute of Physics of the Atmosphere

I had hoped to spend at least half my time at the Institute of Physics of the Atmosphere, where perhaps the most significant Soviet

work in dynamic meteorology is being done. This proved to be impossible, although I was very kindly given an office at the Institute and told to regard it as my own, my time was so taken up with meetings, lectures and visits to other institutions that I was unable to use the office more than once or twice. The fullness of my schedule made it impossible to spend more than a short time with any single individual. Conversations with the principle fluid dynamicists at the Institute, Obukhov, Monin, Yaglom, Dicki and Golytsin therefore only served to whet my curiosity. I did, however, satisfy myself on one point: their preoccupation with problems in turbulence and stochastic processes ^{is} due to the influence of Professor Kolmogorov. Until the end of the war mathematics and mechanics at the University of Moscow were combined in one department under Kolmogorov's chairmanship and Obukhov, Monin and Yaglom were his protégés. These fluid dynamicists and applied mathematicians are scientifically highly sophisticated, comparable in ability with the best in the United States. Their principle accomplishments have been in the theory of turbulence, especially in homogeneous turbulence and its meteorological applications, but except for one paper of Obukhov's they have made no important contributions to the theory of synoptic or planetary-scale fluid motions. This weakness, if it may be called so, pervades all of Soviet meteorology and is probably due to the fact that the senior workers in Soviet dynamic meteorology have been trained by formal mathematicians rather than physical hydrodynamicists. The Russians have had no V. Bjerknes or C.-G. Rossby, and if there is or was a G. I. Taylor, his pupils have not become meteorologists.

Three of the most promising younger men are Dicki, Golytsin and Galperin. Dicki, an applied mathematician, has written on the theory of the stability of parallel flow with and without gravitational fields, as an initial-value problem, arriving at essentially the same conclusions as those of Eliassen-Høiland-Riis, Case and Dyson. Golytsin has studied the acoustic power generated by turbulent winds, à la Lighthill, and has calculated its dissipation in the ionosphere. He finds that the resultant heating is small compared to the heating by downward

heat conduction from higher levels. Galperin is reported to be doing excellent work on auroral physics.

The Institute shares a five story building with the Institute of Physics of the Earth. It also maintains a large, well-equipped and well-staffed laboratory in a forest near Svenigorod, about 70 km from Moscow. I spent a day there in the company of Obukhov and Bicki and was introduced to most of the staff, including a number of the women scientists, of whom I remember a Dr. Feigelson who works on the transport of heat and moisture in the atmospheric boundary layer. She uses the laboratory's small magnetic drum computer, the Ural I.

In all, I spent the better part of six days talking with various members of the Institute. During this time I delivered two lectures and heard two, one by Bicki on normal mode theory for acoustic-gravity wave propagation in the atmosphere, and another by Academician Sretensky on the wave disturbance due to a point source in a rotating homogeneous ocean. Sretensky speaks French and looks and behaves like one of Turgenev's country gentlemen. His hydrodynamics is also *fin de siècle*. He is the director of a large experimental group at the Institute of Marine Physics.

Professor Eibel and his wife Professor Blinova were unfortunately away from Moscow, apparently for health reasons, during the time of my stay. Since they were the principle members of the Institute of Applied Geophysics (IAG) whom I had wanted to meet, I did not go there. However I did meet Dr. Sarkissian of the IAG at the Institute of Atmospheric Physics.

Institute of Oceanology

The most active group engaged in the study of ocean current theory (my principle oceanographic interest) is the Laboratory of Ocean Dynamics of the Institute of Oceanology headed by Dr. Stockmann. They are housed, according to the approved oceanographic manner, in a ramshackle, single-story building surrounded by odds and ends of oceanographic gear. Dr. Stockmann, a very genial person, greeted me by saying that they all knew of my work but that I probably knew little of theirs (too true!)

and therefore that he had asked several of his group to describe their work to me. Lectures were given by Drs. Kamenkovich and Felzenbaum on ocean current theory, by Dr. Kitaigorodsky on the dynamics of the turbulent boundary layer and by Dr. Yampolsky on internal waves. I spoke informally about my own work and that of Stommel, Robinson and Carrier at Harvard. Others in the group whom I met were Gasenswei, Koshliskov, Ivanov and Tarsiev. At the end of the meeting my wife and I joined Kamenkovich, Felzenbaum and Kitaigorodsky for dinner. We found them to be among the most friendly and uninhibited of all the Russian we encountered on our trip.

State University of Moscow

Dynamic meteorology and oceanography at the University of Moscow are taught in the Chairs of Physics of the Atmosphere and Physics of Ocean and Land-Water in the Department of Physics. The general nature of the instruction in these chairs is shown in Appendix I to this report. I have reproduced a translation by Professor Goody of the curriculum for the Aspirant degree in the Chair of Atmospheric Physics at the University of Leningrad and a list of specialized courses and instructions in the Moscow chairs. It will be seen that the curriculum for the first 3 or 3 1/2 years in the departments of physics at the two universities are identical and that the specialized courses in atmospheric physics are nearly identical.

The Chair of Atmospheric Physics is occupied by Professor Binbiuk, who does research and teaching in dynamic meteorology, numerical weather prediction, the sea-breeze and the dynamics of airflow over mountains. He is assisted by Professor Khurgian who works on ozone spectrophotometry and cloud physics. The Chair maintains a small meteorological observatory a short distance from the university for instruction in meteorological observations. It is equipped with a radar as well as the standard meteorological instruments. However, the main research activity in Moscow takes place at the Institute of Atmospheric Physics.

All climatological and most synoptic work is done in the Department of Geography-Geology, where the well known synoptic meteorolo-

gist Professor Khromov teaches. There is apparently a sharp cleavage in student-body, curriculum and faculty between the meteorological chairs of the Departments of Physics and Geography-Geology. No one in the Chair of Physics of the Atmosphere so much as hinted that I might want to see Khromov although he was on campus, as I found by chance when Khrgian and I encountered him in the University restaurant.

I lectured on numerical weather prediction at the University to a large audience which included such active workers in the field as Balpussov, Bykov, Buleyev, Marchuk, Mashkovich, Dobryshmann, Yaglom, Obukhov and Monin. There was much discussion during and after the lecture.

Professor Kolesnikov occupies the Chair of Physics of Oceans and Land-Water. There is also, I am told, a Chair of Oceanology in the Department of Geography and Geology, but as in meteorology the two chairs are quite separate. I was told that the research staff is much larger than the teaching staff. They have a small ship in the Baltic which is used for research and educational purposes. Current research activities include: 1. Direct determination of turbulence in the sea (simultaneous records are taken of horizontal and vertical components of velocity and of temperature and salinity, and many observations in the Arctic and Antarctic are taken under ice); 2. Measurement of deep-sea currents (using anchored buoys and current meters, with measurements down to 7000 meters); 3. Measurement of natural and artificial radioactivity; 4. All types of measurement related to the generation and dissipation of wave energy (Shuleikin has measured energy transfer by normal and tangential wind stresses in the Crimean and has found that the normal stresses transfer the most energy. They measure $\overline{p'w}$ directly. Recent work will be published in Izvestia Akad. Nauk. Ser. Geofys.)

There are, I was told by Diubiuk, about 10 to 15 students in each of the chairs of atmospheric and oceanographic physics.

Central Forecasting Institute

In my visit to the Central Forecasting Institute I met briefly with its director, Dr. Bugayev, and the chiefs of the short range

prediction, hydrometeorological and agrometeorological sections. It was interesting to note that they prepare one month as well as five-day forecasts, which are widely distributed, and claim good accuracy for both. They speak of "vorticity" but the methods are essentially statistical. Most of my time was spent with the small but active group of dynamic meteorologists specializing in numerical weather prediction. This group includes Belousov, Belov, Rykov, Dobyshmann, Heffets, and Mashkovich. The group has obviously been hindered by very limited access to a high-speed electronic computer. However, a meteorological computer center is being established jointly by the Department of Physical-Mathematical Sciences of the Soviet Academy and the Chief Directorate of the Hydrometeorological Sciences (Services?) of the Council of Ministers of the USSR. This center will be at the Central Forecasting Institute and will be directed by P. K. Yevseyev. Its principle functions will be scientific research in NWP and application of electronic computing-engineering to the solution of NWP problems.

My general impression was that the Central Forecasting Institute is a low-priority government agency directed by tradition-minded people, possessing a small but good research group, which is, however, very hampered by lack of support.

Institute of Applied Mathematics - Computer Center

I spent an afternoon at this institute in conversation with the director, Dr. Borodnytsin, whom I had previously met in Stockholm, and with Dr. Sadokov who works on NWP. I was shown the electronic computer BEEM, a machine comparable to the IBM 709.

University of Leningrad

The chair of physics of the atmosphere is held by Professor Kondratiev, a physicist interested in infra-red radiation transfer in the atmosphere. The curriculum is as outlined in Appendix I. Research is done on infra-red radiation, atmospheric optics, ozone and the ionosphere. There is little or no research in dynamic meteorology.

A good account of the research work will be found in a report prepared by Professor Richard Coody of Harvard, who visited the University for several weeks in winter 1960-61. I delivered a lecture which was attended by the staff of the department and members of the Main Geophysical Observatory. Kondratiev, who speaks English well, acted as translator. Afterwards we had many discussions, both at the University and at Kondratiev's summer cottage.

Main Geophysical Observatory

This is the principle meteorological research institute of the Soviet Hydro-Meteorological Service. I met with Prof. Budyko, the director and the members of the dynamics group headed by Prof. Yudin and including Drs. Belinsky, Bogdanova, Dubov, Gudin, Pyatigina, Rukipova and Professor Shvatz. The discussions were very friendly and animated. My impression was that they are very competent people but somewhat formalistic in their approach.

Professor Budyko is well-known for his heat-transfer atlas. He minimized the importance of planting vegetation in changing large-scale climate but emphasized the importance of snow and ice cover. If the polar ice-cap should ever melt it could not freeze again because of the increased absorption of solar radiation (transmitted through the clouds) in summer. He held out little hope for American-Russian scientific cooperation in the existing political climate. Kondratiev, in contrast, was more optimistic.

Professor Mikandrov heads the work on the general physics of clouds, including their aerological and climatological aspects. There is a separate group out in the field who are engaged in work on artificial stimulation of precipitation, fog dispersion and hail suppression, using radar to detect results. It was not possible to elicit any reactions, other than general skepticism, to the possibilities of satellite meteorology.

University of Tashkent in Tashkent, Uzbekistan.

In addition to the departments in Moscow and Leningrad there are departments of meteorology in the provincial Universities of Kazan,

Bilissi (Tiflis) and Tashkent. The chair at the University of Tashkent is held by Professor Georgie who does research on mountain meteorology, the aerology and micro-structure of the tropospheric jet stream and on glaciology. He also cooperates in the research activities of the Tashkent Hydrometeorological Service. He is a firm believer in NWP and has even prepared some two-dimensional numerical forecasts on the University's Ural I computer. They expect soon to obtain an M-20 computer which is faster than BESM. Professor Georgie and I had lengthy conversations on jet-stream meteorology and free-air turbulence. He was touchingly grateful to have contact with a western meteorologist. I also met his friends Dr. Vissner, the head of the forecasting section of the Hydrometeorological Service and Dr. Sarunsakov, the minister of higher education of Uzbekistan. Sarunsakov is a former student of Kolmogorov and former professor of mathematics. He is interested in weather prediction as a statistical problem and was working with Georgie on the application of semi-spaces to this problem.

Appendix II contains a personal calendar of my visit and Appendix III a list of scientists I saw.

Jule G. Charney
Massachusetts Institute of Technology
October 11, 1962.

Appendix I

Physics courses at Leningrad University

The following two pages are a translation of the ^{undergraduate} curriculum ~~for~~ the Aspirant degree at Leningrad University in the Department of Physics. I found this document most illuminating and it may also interest others. A few words of explanation may help.

The ^{term} degree of Aspirant ^{undergraduate study} is the first ^{is} in a Russian University, requiring five and one half years, very intensive work. The program for the first three years is general, and hectic. The last two and a half are taken up mainly with Special Courses, Special Laboratory, Special Seminar and a thesis. These can be in one of the 14 different Chairs, and I give details of the Special courses in Atmospheric Physics only. The thesis for the Aspirant degree usually takes one semester to prepare.

I believe the figures are mainly self-explanatory. The only thing that puzzles me is the entry 'Faculty Disciplines' when similar courses occur in the main body of the Curriculum.

After the Aspirant about 10% of the students stay on and do another ^{graduation} ^{after defense of dissertation} ^{three} ^{four} years research (no courses) and then achieve a Candidat degree (i.e. Ph.D., but without the title). About 10 years later, when the aspiring Physicist wishes to get a chair, he submits a long thesis for a Doctor's degree.

The high-school students entering the University appear to be well-educated in the classical tradition and there can be no doubt that the ^{graduate} Aspirant is a very valuable product. ^{a university}

Richard Goody

January 1961

* Elective subjects

Pencil notes by A.K.

USSR MINISTRY OF HIGH EDUCATION
FIELD PHYSICS

Name of courses	Arrangement by semesters		Total	Hours					CURRICULUM											
	Exams	Course without exams		Lectures	Lab. work	Practice work	Seminar	I		II		Year III Semester		IV		V		VI		
								1	2	3	4	5	6	7	8	9	10	11	12	
								Weeks in semester												
Hours in week																				
History of Communist party of Soviet Union	2,4	1,3	220	120		100	3	3	3	4										
Political economy	5,6	4	150	80		70				2	2	5								
Dialectic and historical materialism	7,9	8	140	70		70								3	2	2				
Foreign language	3,8	5,6,	288			288	4	4	2	2	2	3								
Chemistry	2	1	136	68	68		4	4												
Drafting with elements of descriptive geometry		2	52	18		34	1	2												
Advanced mathematics	1,2,	1,2,																		
Methods of mathematical physics	3,4.	3,4.	500	260		240	10	8	8	4										
General physics	5,6,	5,6,	300	184		116					6	6	4							
Atomic physics	7	7																		
Nuclear physics	1,2,3,4	1,3,4	404	268		136	6	6	8	5										
Laboratory on nuclear physics	5		72	72							4									
Electro-radio technique		6	48	48								3								
Laboratory on electro-radio technique		7	72	-	72								3							
Physics laboratory	5		152	152							5	4								
Work shop practice		5	72		72							4								
Theoretical mechanics	1,2,3,4,		496		496		4	5	6	4	6	5								
Thermodynamic and statistical physics	2	5,6	64		64		2	2												
Electrodynamics	4	3	168	120		48	-	-	6	4										

Thesis

Appendix I (cont.)

Specialized Subjects at Moscow State University in
Meteorology and Oceanography

Chair of Physics of the Atmosphere

Chair of Physics of Oceans and Land Water

1. General Geophysics: Shuleykin and Khrgian (common to both chairs)
 2. Physics of the Sea: Kolesnikov, Shuleykin and Dobrovolsky
 3. General Atmospheric Physics: Khrgian, Diubiuk
 4. Descriptive Oceanography: Orlov
 5. Marine Chemistry
 6. Sea Forecasting: Kolesnikov and Dobrovolsky
 7. Continuum Dynamics: text by Landau and Lifshetz
 8. Special topics in hydrodynamics not included in course 7 (turbulence, viscosity, etc.): Ponomarev
2. General Atmospheric Physics: Diubiuk
 3. Dynamical Meteorology: Diubiuk
 4. Synoptic Meteorology: Khlonin
 5. Theory of Prediction (conventional and numerical): Diubiuk and Dobryshman
 6. Hydrodynamics (including theory of turbulence): Obukhov
 7. Methods of observation and instrumentation

Appendix II

Calendar

May	29	IPA	1	Moscow
"	30	IPA		"
"	31	MSU	2	"
June	1	IPA	3	"
"	2	IAM		"
"	3	---		"
"	4	---		"
"	5	IPA	4	"
"	6	IO		"
"	7	IAM, IO		"
"	8	UL		Leningrad
"	9	UL, MGO	6	"
"	10	MGO		"
"	11	---		"
"	12	---		"
"	13	MGO, UL		"
"	14	UL		"
"	15	---		Moscow
"	16	---		"
"	17	IPA		"
"	18	---		"
"	19	CFI	7	"
"	20	IPA		"
"	21	CFI, IO		"
"	22	---		"
"	23	UT	8	Tashkent
"	24	UT		"
"	25	---		Samarkand
"	26	UT		Tashkent
"	27	---		Moscow
"	28	---		"
"	29	---		"

- 1 Institute of Physics of the Atmosphere
- 2 Moscow State University
- 3 Institute of Applied Mathematics
- 4 Institute of Cosmology

- 5 University of Leningrad
- 6 Main Geophysical Observatory
- 7 Central Forecasting Institute
- 8 University of Tashkent

Appendix III

List of persons seen

Institute of Physics of the Atmosphere

Obukhov, A. M. (Director)
Yaglom, A. M.
Manin, A. S.
Yudalevitch
Golytsin
Dicki, I. A.
Feigelson, E. M.
Galperin, G. I.
Galina, T. I.
Marchuk

Inst. of Oceanology (Lab. of Ocean Dynamics)

Stockmann, W. B. (Director)
Kamenkovitch, V. M.
Kitsigovskiy, S. A.
Felsenbaum, A. I.
Gozenswei, A. N.
Koshliakov, M. N.
Ivanov, Y. A.
Zarev, B. A.
Yampolsky

Moscow State University

Chair of Physics of the Atmosphere

Diubiuk, A. F.
Khrgian, A. K.

Chair of Physics of the Oceans and Land-Water

Kolesnikov
Brebovolaky

Institute of Applied Geophysics

Sarkissian, A. S.

University of Tashkent

Georgio, V. A.

Hydro-meteorological Institute of Tashkent

Viesner, I. N.

Main Geophysical Observatory

Budyko, M. I. (Director)
Dubov, A. S.
Yudin, M. I.
Gandin, L. S.
Shvets, M. E.
Rakipova, L. R.
Nikandrov, V. Y.
Belinsky, N. A.
Bogdanova, N. P.

Central Forecasting Institute

Bagayev, V. A. (Director)
Bagrov, N. A.
Belousov, S. L.
Mashkovich, S. A.
Dobryshmann, E. M.
Belov, P. N.
Heifetz, Y. M.
Bykov

Institute of Marine Physics

Sretensky, L. N.

Computer Center (Inst. App. Math.)

Dorodnytsin, A. A. (Director)
Sadokov, V. P.

University of Leningrad

Kondratiev, K. Y.

Miscellaneous

Saremsakov, T. A.

July 5, 1962

NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL

Questionnaire on Visits Made to the Soviet Union by Wives of American Scientists Under the Exchange Agreement Between the National Academy of Sciences and the Academy of Sciences of the USSR

1. What type of lodgings did your wife receive in the Soviet Union?
2. Was there a charge for her lodgings? If so, how much?
3. What was the approximate cost of her meals each day?
4. What were your wife's approximate travel costs between the major cities in the USSR that you both visited? (Please include the names of the cities and the class of travel used: deluxe, soft, hard, etc.).
5. Did you or your wife receive any medical treatment during your stay in the Soviet Union? If so, please describe the treatment and cost, if any.
6. Was your wife allowed to accompany you on any of your scientific visits? If so, how many, and how was this arranged?
7. What do you estimate to have been the total cost of your wife's stay in the USSR? (Please include the number of days she was in the USSR.)
8. Are there any other categories of expenses that your wife incurred that are not covered in this questionnaire?

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CENTER FOR INTERNATIONAL STUDIES
50 MEMORIAL DRIVE
CAMBRIDGE 39, MASSACHUSETTS

November 1, 1962

Professor Jule G. Charney
Room 24-508

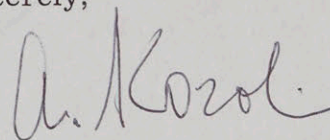
Dear Professor Charney:

Thank you for letting me read the account of your and Mrs. Charney's trip to the Soviet Union. When it is reproduced, as I assume it will be done by the National Academy of Sciences, I would be very grateful for a copy to keep in my files.

You will note that I took the liberty of jotting down some suggestions on the first page of Appendix I. Aspirant is not a degree but the designation of a graduate student enrolled in aspirantura (graduate school or program) who "aspires" to earn the degree of a Candidate of Sciences.

I am enclosing my translation of the 1961 degree on reorganization of research (Appendix J of D/60-20). Please keep it if you wish. I am also enclosing the draft of two chapters dealing with the Soviet R&D organizations on a remote chance that you may wish to look it over. I should of course be very grateful to you for any critical comments you may care to jot down on this draft. Otherwise you need not return the chapters (keep or destroy).

Sincerely,



Alexander G. Korol

AGK/hep
encs.

I am answering the questions in detail because I think, from my experience in the Soviet Union, it is a very good idea for the wives to accompany their husbands. In particular, because one does not have to pay the Inturist rates, the trip is not very expensive apart from the cost of getting to the Soviet Union and back.

1 & 2. I stayed with my husband in a double room at the various hotels selected by the Soviet National Academy. The accommodations were of the finest. My husband's room was paid for by the Soviet National Academy and I paid the difference between a single person occupying the room and a couple. It amounted to approximately \$1.50 a night or a little less.

3. I was able to pay directly for my meals. Breakfast: Between \$.80 and \$1.00. Lunch: Between \$1.00 and \$1.50. Dinner: \$2.50 and \$3.50.

4. We flew to Leningrad where we stayed for six days in the Hotel Astoria, an older but very well appointed hotel. We had two rooms, a bedroom and a sitting room. The cost for me was under \$1.50. The plane fare was about \$15.00 each way. The plane was a jet plane; travel time approximately one hour; there was no distinction between first and second class. I did not pay any cost of the trip to and from the airport. The Soviet Academy arranged for all transportation inside the Soviet Union for my husband and I accompanied him free of charge with the exception that I had to pay for my own airplane tickets. I accompanied my husband on all the sight seeing tours, private car and chauffeur and guide arranged for by the Soviet Academy or the directors of the Institutions visited. The Institution for Atmospheric Physics had their chief translator, Tamara Ivanova, accompany us, take us sightseeing, escort us to the various institutions, in order to facilitate our travel. She arranged for all the tickets, the taxis, the private cars, the guides. According to the exchange agreement, we paid our own meals, but that was all. On several occasions my husband was too busy to sightsee, so Tamara Ivanova took me alone at no cost to me. She did not accompany us during the week ends when she was off duty and we were free to do what we liked. However she helped to obtain tickets to see the Bolshoi Theater, Symphony concerts, the circus, etc. We usually paid for those ourselves, but in Leningrad, the various Institutions provided the tickets and one of the scientists acted as host. We were frequently taken out to dinner by one or another of the Soviet scientists in Leningrad.

We flew to Tashkent and back by jet. The travel time was about five hours. I paid my own plane fare which was 55 Roubles each way. This is approximately \$61.00. Since the distance is a little farther than New York -- Denver, the plane fare was very reasonable. Tamara Ivanova accompanied us to both Leningrad and Tashkent. I incurred no other expense than the plane fare, about \$1.50 a night for my room with my husband, and a few meals. Many meals were paid for by the host

scientists in Tashkent. Again, I accompanied my husband on his visits to the various institutions and the sightseeing trips.

We both wanted to visit Samarkand. We paid ourselves for the plane fare to Samarkand from Tashkent, about \$15.00 round trip for each. We were supposed to pay for the hotel in Samarkand because the trip there was not scheduled as a scientific trip, but I believe Tamara Inanova paid for my husband's share of the room, which was always the greater amount, between \$5.00 and \$6.00. Tamara Inanova accompanied us to Samarkand to facilitate our travel, as neither of us speak Russian. She paid for all the sightseeing and the guide.

5. I received medical treatment in both Tashkent and Moscow because I was sick with food poisoning. Tamara Ivanova called for a doctor who examined me free of charge and prescribed medicine, which was also free of charge. When we arrived in Moscow, a doctor again was called and more medicine obtained. The doctor suggested that I enter the hospital connected with the Soviet Academy because they were afraid of appendicitis. I was assured that I would be given a private room completely free of charge. It was, however, the end of our stay, so I felt that I was well enough to return to the United States. Because I could not travel out of the Soviet Union on the day that our visas expired, the Soviet Academy arranged to have our visas extended for two days and met the additional cost of my husband's stay for the extra two days although this was not part of the original exchange agreement. The officials at the Soviet Academy at first suggested that the last two days be spent on the Inturist schedule. Upon inquiring we found that the cost would be \$60.00 per day for both of us. We explained this to the Academy whereupon they immediately agreed to continue the plan for me as a pay-as-you-go and to defray my husband's expenses. These were no medical charges for me at all.

6. Yes, I was allowed to accompany my husband on all of his scientific visits. In particular, a day's trip to an outlying observatory near Moscow, 80 kilometers away, was planned. I was picked up with my husband at the hotel, the usual procedure, and conducted with him through the observatory, invited to a special lunch prepared for the scientists and us. It was very pleasant, I was almost always present at the lectures my husband gave. If I was not, it was because I had made other arrangements.

I was asked if there were any colleagues in my own field that I would like to meet. Since I work with the Mechanical Translation Project at M.I.T. I was interested in meeting the linguists in that field. Meetings were arranged by one of the host scientists of my husband and I was sent on my own to the Institution I was interested in visiting by private car and chauffeur. I was asked to address one of the linguistic seminars and gave a lecture. Tamara Ivanova accompanied me to facilitate matters and defrayed expenses.

I was invited to the official dinner party given by a group of the host scientists for my husband, and one of my colleagues, a woman linguist, was invited on my behalf.

These arrangements were always made by the host scientists. I would have no way of knowing whether or not it was customary for the arrangements to include the wife always. In my particular case, the host scientists included me in every arrangement and seemed very happy to do so.

7. I was in the Soviet Union for 32 days. I would estimate the cost as follows:

hotel	32 days @ \$1.50	\$ 48.00
food	32 days @ "7.00	"224.00
entertainment		" 50.00
travel cost	Leningrad-Moscow round trip	" 30.00
	Tashkent-Moscow round trip	"122.00
	Tashkent-Samarkand	" 15.00
		<hr/>
		\$489.00

8. I bought a few gifts.

NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

EARTH SCIENCES

Addresses and Titles of Reports

on

Visits to the Soviet Union

Office of International Relations

January 3, 1961

January 3, 1961

ADDRESSES AND TITLES OF REPORTS ON VISITS TO THE SOVIET UNION: EARTH SCIENCES

<u>Address</u>	<u>Date of Visit</u>	<u>Title of Reports</u>
Dr. W. Maurice Ewing Lamont Geological Observatory Columbia University Palisades, New York	July 30-August 9, 1958 (Special Committee of the International Geophysical Year 5th Meeting)	Report of the Vth Meeting of CSAGI (1958)
Dr. Frank Press Seismological Laboratory California Institute of Technology Pasadena, California	July 30-August 9, 1958 (Special Committee of the International Geophysical Year 5th Meeting)	Report on Tour of Soviet Geophysical Laboratories, August 9-August 21, 1958
Dr. Chauncy D. Harris Department of Geography University of Chicago Chicago 37, Illinois	May-June, 1957	Geographic Research and Teaching Institutes in the Soviet Union: Notes on Trip to U.S.S.R. in May-June, 1957
Dr. Earl Ingerson Department of Geology The University of Texas Austin 12, Texas	December, 1957 Geochemistry Symposium, Moscow	List of scientists and institutes visited in Leningrad, Moscow and Kiev, December, 1957

NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

Soviet Institutes and Scientists

Visited by

Americans in the Physical Sciences

Office of International Relations

January 3, 1961

P R E F A C E

Travel of Westerners to the U.S.S.R. and of Soviet citizens to the United States, cut off for so many years before and after World War II, commenced haltingly about 1956 and has accelerated from that time. It received official recognition and encouragement with the conclusion in 1958 of the Lacy-Zaroubin exchange agreement between the Governments of the United States and the U.S.S.R., which was renegotiated and extended in the fall of 1959 to cover formal exchange activities between the two countries for 1960-61. One of the provisions of the 1958 agreement was a program for exchange of visits by scientists of the two countries under the sponsorship of the National Academy of Sciences and the Academy of Sciences of the U.S.S.R. Accordingly, on July 9, 1959, the two Academies concluded a two-year agreement on exchanges.

Thus, under these and other formal agreements on exchange of persons between the United States and the U.S.S.R., as well as among the thousands of private American tourists, many of our scientists have been visiting the Soviet Union in recent years. In view of the relative lack of knowledge about Soviet science and scientists, the Academy-Research Council felt that it could perform a useful service to the American scientific community by gathering information concerning the organization and personnel of scientific and technological activities in the U.S.S.R. In 1959, on the initiative of Mr. Joel Orlen, then a member of the staff of the Office of International Relations, and with the encouragement of Dr. Wallace W. Atwood, Jr., Director of the Office, inquiries were sent to American scientists who had recently visited the Soviet Union. An effort was made to identify as many of these scientists as possible. In every case those scientists who were approached and who had in fact been to the Soviet Union in recent years kindly provided information about their visits - where they went and whom they saw. In some instances they also provided reports they had written. All of this information was given with the understanding that it would be made available to others of the American scientific community to help them plan subsequent professional visits to the U.S.S.R.

The actual work of cataloguing the information received has been done by Mrs. Svetlana Edmundson, Professional Assistant of the Office of International Relations, who also retrieves the catalogued data upon the request of individual American scientists.

The attached list, dated January 3, 1961, is the result of the information received from American scientists in one area of the natural sciences: Physical Sciences. This material will be edited periodically, perhaps every six or nine months, as new information is received and catalogued.

The Office of International Relations would welcome comments as to the usefulness of these lists as well as any suggestions for improving this service.

The Office wishes particularly to avail itself of this opportunity to thank the American scientists who have assisted in this endeavor, both by providing reports on their visits and by counselling their colleagues who are thus able to benefit from earlier experience.

Washington, D. C.
January 16, 1961

January 3, 1961

LIST OF SOVIET INSTITUTES AND SCIENTISTS VISITED BY
AMERICAN PHYSICISTS

(For addresses and titles of reports see separate attachment)

<u>Soviet Institutes and Scientists</u>	<u>Visited by</u>	
Institute of Semiconductors, Academy of Sciences, USSR, <i>Leningrad</i>	L. Apker	D. Anderson*
A. I. ANSELM	L. Apker	
Ye. D. DEVYATKOVA	L. Apker	
G. DUBROVSKIY	L. Apker	
A. F. IOFFE	L. Apker	D. Anderson*
A. V. IOFFE	L. Apker	
Ye. A. KOLENKO	L. Apker	
M. I. KORNFEL'D	L. Apker	
V. Kh. KOZLOVSKIY	D. Anderson*	
Yu. P. MASLAKOVETS	L. Apker	
I. V. MOCHAN	L. Apker	
PETRUSEVICH	L. Apker	
L. S. STILBANS	L. Apker	
V. K. SUBASHKEV	L. Apker	
Institute of Physics, Academy of Sciences, Ukrainian SSR, <i>Kiev</i>	L. Apker	
A. D. BELYAYEV	L. Apker	
P. G. BORZYAK	L. Apker	
V. L. BROUDE	L. Apker	
M. F. DEYGEN	L. Apker	

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Physics, Academy of Sciences,
Ukrainian SSR (cont.)

I. M. DYKMAN	L. Apker
K. D. GLINCHUK	L. Apker
V. I. LYASHENKO	L. Apker
Ye. G. MISELYUK	L. Apker
N. D. MORGULIS	L. Apker
O. F. NEMETS	L. Apker
S. Ya. PEKAR	L. Apker
A. F. PRIKHOTKO	L. Apker
E. I. RASHBA	L. Apker
O. G. SARBEI	L. Apker
N. M. TKACH	L. Apker
K. B. TOLPYGO	L. Apker

Physics Institute im. P. N. Lebedev
Academy of Sciences, USSR, *Moscow*

	R. Cole*	B. Matthias*
	D. Anderson*	L. Apker
	C. P. Smyth*	C. Kittel*
	R. Marshak*	W. Kock
	A. Kip	H. Petschek*
	S. C. Brown*	
V. V. ANTONOV-ROMANOVSKIY	L. Apker	
A. M. BALDIN	R. Marshak*	
N. G. BASOV	W. Kock	
S. V. BOGDANOV	L. Apker	
K. I. BRITZIN (Also at Moscow State University im. M. V. Lomonosov)	L. Apker	
A. N. CHARAKHCH'YAN	M. M. Shapiro*	
A. Ye. CHUDAKOV	M. M. Shapiro*	

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Physics Institute im. P. N. Lebedev
Academy of Sciences, USSR (cont.)

Y. L. FEYNBERG	R. Marshak*	
Ye. S. FRADKIN	R. Marshak*	
M. D. GALANIN	L. Apker	
V. L. GINZBURG	D. Anderson*	H. Petschek*
	A. Kip	L. Davis*
	M. M. Shapiro*	
V. I. GOLDONSKIY	R. Marshak*	
I. Y. KOBZAROV	R. Marshak*	
Ye. A. KONOROVA	L. Apker	
A. A. KORCHAK	M. M. Shapiro*	
V. A. LYUBIMOV (Also at Moscow State University im. M. V. Lomonosov)	H. Petschek*	
V. M. MALOVETSKAYA	L. Apker	
S. L. MANDELSHTAM	L. Apker	S. C. Brown*
A. I. NIKISHOV	M. M. Shapiro*	
L. B. OKUN (Also at Institute of Theoretical and Experimental Physics)	M. Gell-Mann*	R. Marshak*
V. Ye. ORANOVSKIY	L. Apker	
S. V. POKROVSKAYA	L. Apker	
A. M. PROKHOROV	D. Anderson*	W. Kock
A. V. RZHANOV	L. Apker	
G. I. SKANAVI	R. Cole*	D. Anderson*
	L. Apker	C. P. Smyth*
	C. Kittel*	B. Matthias*
D. V. SKOBEL'TSYN	M. M. Shapiro*	
N. N. SOBOLEV	H. Petschek*	

*For other members of delegation please see attachment

<u>Soviet Institutes and Scientists</u>	<u>Visited by</u>	
Physics Institute im. P. N. Lebedev Academy of Sciences, USSR (cont.)		
L. A. SOROKINA	L. Apker	
S. I. SYROVATSKIY	H. Petschek*	M. M. Shapiro*
I. Ye. TAMM (Also at Joint Nuclear Research Institute at Dubna)	D. Anderson*	R. Marshak*
V. S. VAVILOV	L. Apker	
Yu. N. VAVILOV	L. Apker	
B. M. VUL	D. Anderson*	L. Apker
	B. Matthias*	
Physico-Technical Institute, Academy of Sciences, USSR, Leningrad	L. Apker	R. Marshak*
	J. H. Williams*	
A. N. ARSENYEVA-GEYL	L. Apker	
L. N. DOBRETSOV	L. Apker	
A. Z. DOLGINOV	R. Marshak*	
V. M. DUKELSKIY	J. H. Williams*	
N. V. FEDORENKO	J. H. Williams*	
V. N. GRIBOV	M. Gell-Mann*	R. Marshak*
Ye. F. GROSS (Also at Leningrad State University im. A. A. Zhdanov)	L. Apker	
D. M. KAMINKER	L. Apker	
B. P. KONSTANTINOV	J. H. Williams*	
A. A. LEBEDEV (Also at Leningrad State University im. A. A. Zhdanov)	L. Apker	
D. N. NASLYEDOV	L. Apker	
P. P. PAVINSKIY	L. Apker	
M. N. RUMSH	L. Apker	
L. I. RUSINOV	J. H. Williams*	

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Soviet Institutes and Scientists

Visited by

Physico-Technical Institute, Academy
of Sciences, USSR, Leningrad (cont.)

S. M. RYVKIN	L. Apker
I. M. SHMUSHKEVICH	R. Marshak*
V. M. TUCHKEVICH	L. Apker
B. P. ZAKHARCHENYA	L. Apker

Ukrainian Physico-Technical Institute
Academy of Sciences, Ukrainian SSR, *Kharkov*

M. Ya. AZBEL' (Also at Kharkov State University im. A. M. Gorkiy)	A. Kip
I. M. LIFSHITS (Also at Kharkov State University im. A. M. Gorkiy)	D. Anderson* A. Kip C. Kittel*
E. A. KANER (Also at Kharkov State University im. A. M. Gorkiy)	A. Kip
M. I. KAGANOV	C. Kittel*

Institute of Crystallography
Academy of Sciences, USSR, *Moscow*

K. S. ALEKSANDROV	C. Kittel* R. Cole* C. P. Smyth* L. Apker D. Anderson*
L. M. BELYAYEV	D. Anderson*
BOGDANOV	L. Apker
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G. G. LEMMLEYN	L. Apker
L. S. MILYEVSKIY	L. Apker

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<u>Soviet Institutes and Scientists</u>	<u>Visited by</u>	
Institute of Crystallography Academy of Sciences, USSR (cont.)		
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Institute of Chemical Physics, Academy of Sciences, USSR, <i>Moscow</i>		
D. A. FRANK-KAMENETSKIY (Also at Institute of Atomic Energy, Academy of Sciences, USSR)	H. Petschek*	J. H. Williams*
B. A. BELOKON'	H. Petschek*	
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A. I. ALIKHANOV	R. Marshak* A. Roberts*	J. H. Williams* M. Gell-Mann*
A. I. ALIKHANYAN	R. Marshak* A. Roberts*	J. H. Williams*
V. B. BERESTETSKIY	J. H. Williams*	
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Soviet Institutes and Scientists

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M. Gell-Mann* L. Apker

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A. Kip

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D. Anderson*

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S. A. SKVORTSOV	J. H. Williams*	
N. A. YAVLINSKIY	J. H. Williams*	
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L. Davis*

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J. H. Williams*

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Soviet Institutes and Scientists

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Joint Nuclear Research Institute, Dubna (cont.)

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M. A. MARKOV	R. Marshak*
M. G. MESHCHERYAKOV	J. H. Williams*
B. M. PONTECORVO	M. Gell-Mann*
L. D. PUZIKOV	R. Marshak*
D. V. SHIRKOV	R. Marshak*
Ya. A. SMORODINSKIY	R. Marshak*
V. G. SOLOVYEV	R. Marshak*
I. Ye. TAMM (Also at Physics Institute im. P. N. Lebedev)	D. Anderson* R. Marshak*
V. I. VEKSLER	J. H. Williams* M. M. Shapiro*
Ye. K. ZAVOYSKIY	J. H. Williams*

Direct Current Scientific Research
Institute, *Leningrad*

L. A. SENA	S. C. Brown*
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Institute of Physics of the Atmosphere,
Academy of Sciences, USSR, *Moscow*

G. S. GOLITSYN	H. Petschek*
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Moscow State University im. M. V.
Lomonosov

S. C. Brown*	R. Cole*
A. Kip	D. Anderson*
B. Matthias*	L. Apker
R. Marshak*	C. Kittel*
J. Den Hartog*	H. Petschek*
A. Ferri*	W. Prager*
H. Liepman*	M. M. Shapiro*

*For other members of delegation please see attachment

Soviet Institutes and Scientists

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Moscow State University im. M. V.
Lomonosov (cont.)

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Dubna and at Mathematics Institute
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Electronics Institute, Academy of
Sciences, USSR)

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A. P. KAPITSA

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B. K. KERIMOV

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L. Apker

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E. OMELYANOVSKIY

L. Apker

V. A. OSTROBORODOVA

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G. I. PETROV

H. Petschek* H. Liepman*

S. B. PIKEL'NER

H. Petschek*

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L. Apker

L. I. SEDOV

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H. Petschek*

A. Ferri*
W. Liepman*

V. N. SHIGULYEV
(Also at Central Institute of Aero-
Hydrodynamics im. N. Ye. Zhukovskiy)

H. Petschek*

Yu. M. SHIROKOV

R. Marshak*

A. A. SOKOLOV

R. Marshak*

L. D. SOLOVYEV

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K. P. STANYUKOVICH
(Also at Higher Technical School im.
N. E. Bauman)

H. Petschek*

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R. V. TELESNIN

A. Kip

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R. Marshak*

L. Davis*

Leningrad State University im.
A. A. Zhdanov

S. C. Brown*
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Van Vleck
M. Gell-Mann*
J. Den Hartog*

Ya. G. DORFMAN

A. Kip

G. F. DRUKAREV

S. C. Brown*

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Ye. F. GROSS
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Academy of Sciences, USSR)

L. Apker

L. M. KACHANOV

W. Prager*

A. I. KUZNETSOV

W. Prager*

*For other members of delegation please see attachment

<u>Soviet Institutes and Scientists</u>	<u>Visited by</u>
Leningrad State University im. A. A. Zhdanov (cont.)	
A. A. LEBEDEV (Also at Physico-Technical Institute, Academy of Sciences, USSR)	L. Apker
I. L. SOKOLSKAYA	L. Apker
Kharkov State University im. A. M. Gorkiy	A. Kip
M. Ya. AZBEL' (Also at Ukrainian Physico--Technical Institute, Academy of Sciences, Ukrainian SSR)	A. Kip
E. A. KANER (Also at Ukrainian Physico-Technical Institute, Academy of Sciences Ukrainian SSR)	A. Kip
I. M. LIFSHITS (Also at Ukrainian Physico-Technical Institute, Academy of Sciences Ukrainian SSR)	D. Anderson* A. Kip C. Kittel*
Novosibirsk State University	
I. N. VEKUA	W. Prager*
Kazan State University im. V. I. Ulyanov-Lenin	A. Kip
S. A. AL'TSHULER	A. Kip
N. N. NEPRIMEROV	A. Kip
L. G. SHEKUM	A. Kip
Kirgiz State University, <i>Frunze</i>	
F. I. FRANKL'	A. Ferri*
Lvov State University im. I. Franko	H. Petschek*
S. A. KAPLAN	H. Petschek*

*For other members of delegation please see attachment

<u>Soviet Institutes and Scientists</u>	<u>Visited by</u>	
Ural State University im. A. M. Gorkiy, <i>Sverdlovsk</i> S. V. VONSOVSKIY (Also at Institute of Physics of Metals, Ural Affiliate, Academy of Sciences, USSR)	A. Kip	
	A. Kip	
	S. C. Brown*	L. Apker
Polytechnical Institute im. M. I. Kalinin, <i>Leningrad</i>	M. M. Shapiro*	
G. Yu. DZHANELIDZE	W. Prager*	J. Den Hartog*
V. A. FLORIN	W. Prager*	
S. A. FRIDRIKHOFF	L. Apker	
V. Ye. GOLANT	S. Brown*	
M. L. KAPITSA	L. Apker	
L. G. LOYTSYANSKIY	H. Liepman*	
A. I. LUR'YE	J. Den Hartog*	
R. NEMCHYONOK	L. Apker	
Engineering Physics Institute, Moscow		
D. M. SKOROV (Also at Main Administration for Utilization of Atomic Energy)	J. H. Williams*	
K. V. SHALIMOVA	L. Apker	
Institute of Mathematics im. A. M. Razmadze, Tbilisi		
M. Sh. MIKELADZE	W. Prager*	
N. I. MUSKHELISHVILI	W. Prager* H. Liepman*	J. Den Hartog*
Institute of Mechanics, Academy of Sciences, USSR, <i>Moscow</i>	W. Prager*	H. W. Liepman*
A. L. GOL'DENVEYSER	W. Prager*	J. Den Hartog*

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Mechanics, Academy of Sciences,
USSR (cont.)

A. S. GRIGOR'YEV

W. Prager*

A. A. IL'YUSHIN

W. Prager*

D. D. IVLEV

W. Prager*

G. K. MIKHAYLOV

J. Den Hartog*

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A. A. MOVCHAN

W. Prager*

A. A. NIKOL'SKIY

A. Ferri*

(Also State Commission for
Theoretical and Applied Mechanics,
Bureau of the Department of Tech-
nical Sciences, Academy of Sciences,
USSR.)

KH. Akh. RAKHMATULIN

W. Prager*

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G. S. SHAPIRO

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V. V. SOKOLOVSKIY

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Institute of Radio Engineering and Electro-
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L. Apker

W. Kock

V. G. ALEKSEYEVA

L. Apker

A. S. BOROVIK-ROMANOV

L. Apker

Z. S. CHERNOV

W. Kock

S. G. KALASHNIKOV

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L. Apker

V. A. KOTELNIKOV

W. Kock

T. M. LIFSHITS

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A. L. MIKAYELYAN

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*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Radio Engineering and Electronics,
Academy of Sciences, USSR (cont.)

N. A. PENIN	L. Apker
A. A. PISTOL'KORS	W. Kock
Ya. Ye. POKROVSKIY (Also at Moscow State University im. M. V. Lomonosov)	L. Apker
N. M. POLITOVA	L. Apker
N. Ye. SKVORTZOVA	L. Apker

Higher Technical School im. N. E.
Bauman, Moscow

A. N. OBMORSHEV	J. Den Hartog*
S. D. PONOMAREV	J. Den Hartog*
K. P. STANYUKOVICH (Also at Moscow State University im. M. V. Lomonosov)	H. Petschek* H. Liepman*
V. V. STRUMINSKIY (Also at Central Aero-Hydrodynamics Institute im. N. Ye. Zhukovskiy)	H. Liepman*

Main Administration for Utilization of
Atomic Energy, Council of Ministers,
USSR

D. P. FILIPPOV	J. H. Williams*
V. A. MAKHNEV	J. H. Williams*
M. F. OGURTSOV	J. H. Williams*
S. N. VOLOSHCHUK	J. H. Williams*
V. S. YEMELYANOV	J. H. Williams*

Institute of Mathematics im. V. A.
Steklov, Academy of Sciences, USSR,
Moscow

D. Anderson* M. Gell-Mann*

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Mathematics im. V. A.
Stekov, Academy of Sciences, USSR
(cont.)

N. N. BOGOLYUBOV
(Also at Joint Nuclear Research,
Dubna and at Moscow State University
im. M. V. Lomonosov)

M. Gell-Mann* D. Anderson*
J. H. Williams* J. Den Hartog*

A. A. DORODNITSYN
(Also at Computer Center, Academy
of Sciences, USSR)

H. Liepman*

S. V. TYABLIKOV

D. Anderson*

V. V. TOLMACHEV

D. Anderson*

Krivoi Rog Mining Area

J. H. Williams*

S. G. NIKHLIN

J. H. Williams*

L. S. VOLKOV

J. H. Williams*

Zheltaya Voda Mine

R. A. GRIGORIAN

J. H. Williams*

ZAGAT

J. H. Williams*

Institute of Electromechanics,
Academy of Sciences, USSR, *Leningrad*

A. Ye. ALEKSEYEV

L. Apker

Institute of Machine Studies,
Academy of Sciences, USSR, *Moscow*

J. Den Hartog*

I. I. ARTOBOLEVSKIY

J. Den Hartog*

Institute of Mathematics and Mechanics,
Academy of Sciences, Armenian SSR, *Yerevan*

N. Kh. ARUTYUNYAN

W. Prager*

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Nonferrous Metals and Gold
im. M. I. Kalinin, *Moscow*

A. A. BOCHVAR

J. H. Williams*

Institute of Metallurgy im. A. A. Baykov, *Moscow*

M. Ya. DASHEVSKIY

L. Apker

Nuclear Research Institute at Sukhumi

R. A. DEMIRKhanov

J. H. Williams*

Scientific Research Institute of Terrestrial
Magnetism, *Krasnaya Pazha*

S. Sh. DOLGINOV

M. M. Shapiro

Scientific Research Institute of Industrial
Structures, *Moscow*

I. I. GOLDENBLAT

W. Prager*

All-Union Aluminum and Magnesium Institute,
Leningrad

V. M. GUSKOV

L. Apker

L. Apker

No Affiliation Known

K. A. KERIMOV

W. Prager*

V. D. KLUSHNIKOV

W. Prager*

Technological Institute of Light Industry
im. L. M. Kaganovich, Moscow

V. O. KONONENKO

J. Den Hartog*

Astronomical Institute im. P. K. Shternberg
Moscow

A. G. MASEVICH

M. M. Shapiro*

*For other members of delegation please see attachment

Soviet Institutes and Scientists

Visited by

Institute of Mathematics, Academy of Sciences,
Ukrainian SSR, *Kiev*

Yu. A. MITROPOLSKIY

J. Den Hartog*

Institute of Nuclear Problems, Academy
of Sciences, USSR (*Now Soviet Institute for
Nuclear Research, Dubna*)

Ye. V. PISKAREV
(Also at Institute of Atomic Energy)

J. H. Williams*

Siberian Branch, Academy of Sciences,
USSR, Novosibirsk

Yu. N. RABOTNOV

W. Prager

J. Den Hartog*

Institute of Construction Mechanics,
Academy of Sciences, Ukrainian SSR

G. N. SAVIN

J. Den Hartog*

Institute of Physics, Yakutsk Affiliate,
Academy of Sciences, USSR

Yu. G. SHAFER

M. M. Shapiro*

Central Aero-Hydrodynamics Institute im.
N. Ye. Zhukovskiy, *Moscow*

V. N. SHIGULYEV
(Also at Moscow State University
im. M. V. Lomonosov)

H. Petschek*

V. V. STRUMINSKIY
(Also at Higher Technical School im.
N. E. Bauman, Moscow)

H. Liepman*

Institute of Physical Chemistry, Academy of
Sciences, USSR, *Moscow*

F. F. VOL'KENSHTEYN

L. Apker

L. Apker

*For other members of delegation please see attachment

1. 5/19/62 Talk on Russian Trip to Boston Met. Soc.

1. Reason for trip

Browke-Nesmeyanos agreement

20 passes to lecturers 14 U.S., 11 USSR

78 passes to army 12 " 13 "

6 ^{research} ~~current~~ ~~passive~~ 3 4

Conant, Skinner

2. Paris

a. Montparnasse

b. St Germain

c. Battered sold. no accent

d. Lost zipper at Brosserie - steak-pomme frite-wine.

3. Paris - Warsaw

a. Russians at Le Bourget

Wide legged trousers. Print dresses. Sport shirts.

(Slide) b. The airplane - Tupolev 104 A - twin jet. 500 mph.

Sleak and beautiful. Very rounded. Process
 interior. Not greatly pressurized. Best wish
 to seats. No appreciable diff. between first and
 second class; sturgeon with caviar instead of
 caviar. Vodka and wine for 1st. Was travelling
 2nd but got vodka & wine because foreigner.
 Only advantage first: reservations in advance.

C. Stop in Copenhagen

(Slides 2) Moscow as soon? Stopped to pick up
 Soccer players. One of most beautiful airports.

Attendants pleasant too. Interesting means of locomotion for long corridors.

4. Arrival at Moscow Airport

a. Quick trip (about 3 hrs)

(Slide)

Meeting with Obukhov and Tamara Ivanovna *Delina*

Train. Touching reunion scenes. Small airport collected passports. Reluctant to part with passport. Camera's crowd.

Ease of clearing customs. Zim vs. Cadillac

5. Tripte viscow

Slide 2

Countryside a bit like Minnesota or Canada.
Nearly empty. Birch copses, Pine woods
Rather primitive log cabin structure, but with
TV antennas. Rather reminded me of outcrops
or adobe hut or urban reservation in New Mexico.
Houses redeemed by cherry trees in bloom.

Description of big block apartment.
Vicinities of viscow.

Slide 2

6. Hotel Ukraina

Collected passports

a kind of Café de la Paix. Borrowed 10 roubles from English friend.

delegation of north Vietnamese - fell into arms of Russians
stately, gracefully and brightly Europeans

English - Industrial Exhibition

French Indians, Central Asians, Chinese, in
buttoned tunics, Japanese, etc.

(Slide)

Chess team - Bisguier, Ice Follies, Royal Ballet

7. Visit to Institute of Physics of Acad.

a. Institute - Univ. System of Russia.

Instit. Phys. of Acad. } same day

" " Earth }

Main Hydrophysics Inst.

Institute of Oceanology.

Hydro met service

Central Forecasting Institute - Forecast & research

Main Geophysical Institute - Sevastopol.

Academicians

Oceanographer - Shuleykin

Stretenskiy

~~Stokhman~~

Meteorologist - Blinova - weather forecast

Phys. Met. -- Ribet

" " Olnskan

Cosmology - Shvednytskiy

Univ. - Shubinskiy Chairman U. of Moscow

Few students 10-15 in each of Met. & Ocean.

main depts in Moscow, Leningrad, Tashkent,
Tiflis, Kazan.

(Slide) Reel off list of subjects of Dept. Chem. Phys.
Res. at Mosc. U. 1. oxygenated air flow + clouds in
cave

2. Short range w. p.

3. atm. ozone

4. Atmospheric phys.

Conductivity with discharge U. of Leningrad.

Mention Dept Phys 10 years. - Chernin in Geography.

There is also a chair of oceanology - more descriptive.
15 1/2 years altogether.

Research done mainly in institutes.

Obukhov, Monin, Yaglom are staff. of U.S.S.R.

Petelinovich with Kelmscroft - Director
division of math. & mechanics. Ob., Mon., Yag.
students.

(Slide)

Oceanologists?

Tennis - Aragoi

11. Kremlin + Museum - Red Square.

(Slide)

a. Red Square

(Slide)

b. Lenin - Steinhilber

(Slide)

c. From outside

(Slide)

d. In the Kremlin grounds.

(Slide)

e. Cathedral of the Assumption + other

(Slide)

f. Archangel'sky cathedral

(Slide)

g. Interior

(Slide)

h. gun.

13 Swags + B. shoi

(Shi) a. w. w. w. w.

(Shi) b. B. shoi

14 Seimigood

(Shi) a. Mai Geyly olo.

b. shoi

c. Petroff.

15. Sarabant.

Shah - Zaida Tomb

Registan

Alay - bay

Bibi - Khudem - mosque

1. Moscow - Chicago, Fenwick - Boston
2. Describe living conditions of people, dress
3. " buildings,
4. New buildings at restoration - sketch of post office
5. Lunch in airport with de page
6. Tanna gave English lessons at last.
7. Director ^{of} Tanna was wife - Luke of Linn.
8. Translation of speech - Bellman, Kachibof.
9. Spoke English

English

Incidents

1. Meeting with post in Saualand.

Went into restaurant to lunch.

Tanna had to sit down to get up in time to get tickets.

Becky waits - Tanna explained - Secretly had had money.

Tanna explained what choice in food.

Syrie says no should.

MR TINKHAM - WALKER 11-1

KRESGE

MURPHY AFTER 5

Street scenes

Beautiful Leningrad - Neva - Hermitage - Peterhof. 60-6, 7, 8, 9, 11, 13, 14, 17, 19

Maenla (Just a few shots of Helsinki place. 56-13, 14, 4, 3, 2

A dooba 59, 5, 6, 7, 8, 1, 11, 13

~~Metenologist & oceanography.~~

Leningrad

People. 56-14, 57-19, 15, 57-3, 58-18, 17, 7, 3, 59-12, 3, 2

60-1, 2, 3, 4, 5, 6, 7, 8, 7, 10, 14. 62-11, 63-1, 11, 14

Scenes 57-6, 7, 61-12, 16, 18, 62-3, 7, 8, 9, 1, 10, 17
63-6, 9, 17, 19

Helsinki place 57-12

U. of Leningrad - 57-10, 9

62-2, 12, 20

63-13, 15, 20

64-1, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16, 18

Directly out.

$$J = \frac{1}{4\pi^2 i \gamma} \int_{\sigma - \infty i}^{\sigma + \infty i} \frac{\Delta^2 + 4\omega^2}{s} K_0(\Delta r) e^{st} ds \int_0^\infty f(x) e^{-sx} dx$$

$\sigma_1 = \sigma_2 =$

If $\omega = 0$.

$$\phi(r, t) = \frac{1}{2\pi} \int_0^\infty f\left(t - \frac{r}{c} \chi u\right) du \quad \text{--- Levi-Civita}$$

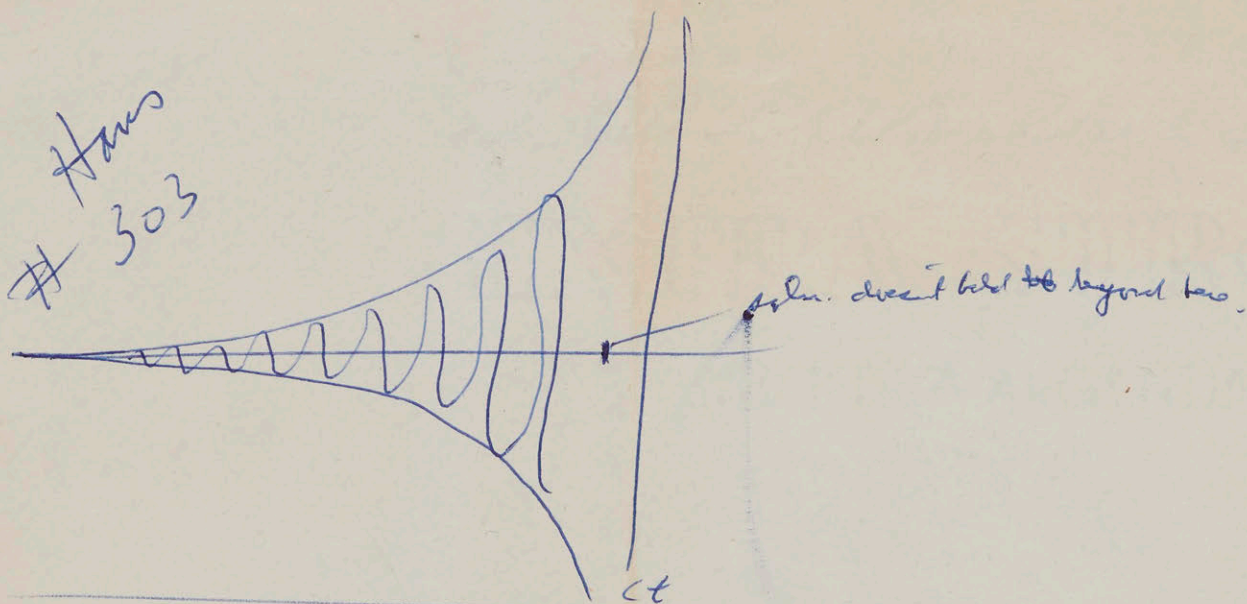
$$f(u) = \begin{cases} 1 & 0 < u < \tau \\ 0 & u > \tau \end{cases}$$

$$\int_0^\infty f(x) e^{-sx} dx = \frac{1}{s} (1 - e^{-s\tau})$$

If $r > ct$ Both integrals zero.

$$J = \frac{2\omega}{\pi \gamma} \frac{\varepsilon^2}{\sqrt{1-\varepsilon^2}} \left\{ \frac{\omega \Omega \sqrt{1-\varepsilon^2}}{\varepsilon} - \frac{\omega \Omega \sqrt{1-\varepsilon^2}}{\Omega} \right\}$$

$r = \varepsilon ct, \quad \Omega = 2\omega\tau, \quad \Omega' = 2\omega(t-\tau)$



$f(t) = 1, t > 0$ two explicit poles.

Mention student in schedule; they / period rearrange.

$$J = \frac{1}{4\pi^2 i \gamma} \int_{\sigma - \infty i}^{\sigma + \infty i} K_0(\Delta r) e^{st} ds + \frac{4\omega^2 - v^2}{4\pi^2 i \gamma} \int_{\sigma - \infty i}^{\sigma + \infty i} K_0(\Delta r) \frac{e^{st}}{s^2 + v^2} ds$$



Nadokow was refused a visa by UNESCO } (Sam Kerlis?)
 Lovelutzy was not permitted to go to } at M.I.T.?
 MIT in 1958.

- 1 Shuman
- 1 Aronson
- 4 Swagmily
 - a. Lilly
 - b. Markov

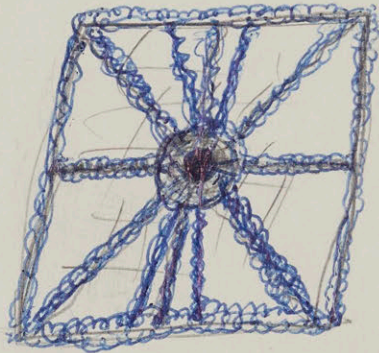
- 1 Leith
- 1 Gies
- 1 Peltor
- ~~the~~
- 1. Luey
- 1. Chay
- 1 Peltor
- 1. Thompson
- 1. Green

14 Lees
 Wilkins

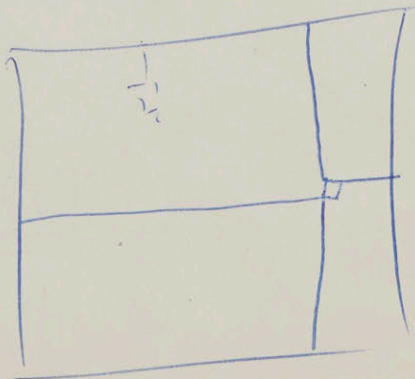
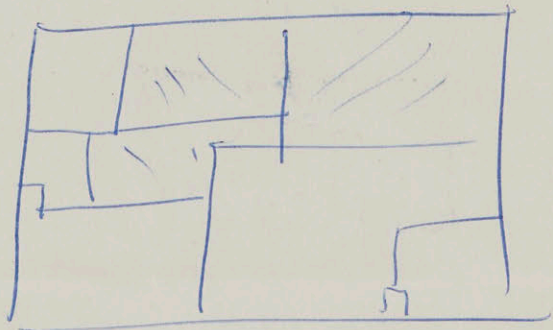
115-20

Wentele

- Pletyn
- Biedfeld
- Kosubun
- Bein.



Friedman
 Mendel Marantz



Marsdenia in the cup of

Maya Sleeh Zindoh (the King's cup)
at Samarland.

In the
middle
of
the
cup

pressed Karantouphos,
was ahead, jumped
the wall
Holy Shrine

down side / myphique scies
crater + foam alloying
flour and fossils

Observatory of the King's cup -
grander of Samarland. Catalogue 1818 stars

Particulars are both of Alabari
quite less than what is required -
I would have thought best to let
astronomer come with instruments

Ching... for... Bibi-Khanym - Catalogue of Samarland
The Emir - name
Gour-emir - tent of Samarland

1404

Registron - (public square)

$$V_{xt} + \beta V = 0$$

$$\psi_{xxt} + \beta \psi_x = 0$$

$$(\psi_{xt} + \beta \psi)_x = 0$$

$$\psi_{xt} + \beta \psi = C \stackrel{?}{=} 0$$

$$\psi = \Psi(x) e^{i\nu t}$$

$$i\nu \Psi_x + \beta \Psi = 0$$

$$\Psi = A e^{-\frac{\beta}{i\nu} x}$$

Piller Aviator

4538T

Pilot (w/prop)

6:00 ready.

Outlook for theoretical work.

Experiment problems.

in lecture notes.

Useful parts of my paper.

View of current state of art, see manuscript.

3/4 hour.

Beginning at 9:45 to 11:00

11:00 - to 2:00

Kusnietsov Most Кузнецкий мост
International book shop Марасин Международная
Книга

2/410 Bisquin

Appendix

0. U.S.S.R. - U.S.S.R. - U.S.S.R. - Tashkent - ^{Tbilisi} - ~~Rabat~~ - Kozan
1. Describe dept. of ^{phys} ~~atm. phys~~ / U. of Moscow
- a. Teaching
- i. Preparation of students
- ii Staff
- iii no of students, Time
- b. Research
- i. Rel to acad - staff - Obshch
- ii Gidrol. obozr - Yuzhno - Dniepr
2. Describe dept. of phys. of oceans + land water - U. of Moscow
3. Describe Dept. of U. of Samarkand

-
- A. Receipt by Obshch. Re
- B. Describe of I.A. Phys. + people + research. Moscow May 28 - June 8
- C. ~~Letter from~~ U.S.S.R. of Moscow. Samarkand June 8 - June 15
- D. Let. of Oceanology. Moscow June 15 - June 22
- E. Visit with Samarkand. Tashkent June 22 - June 25
- F. Central Family Let. Samarkand June 25, 26
- G. U. of Samarkand. Moscow June 26 - 29
- H. ~~Letter from~~ U.S.S.R. of Obshch. Re.
- I U. of Tashkent.
- J. Let. of Oceanology + Let. U.S.S.R. Hydrophysic.
- K. Lectures
- L. Summary - Gidrol. obozr - no of students - Let. of phys. in family
- M. Check letter from Obshch. Re + Rabat

Complaints from the area

no 5
Z 6
wed 7
th 8

Stocher

{ Institute of Oceanology, Acad. March.
{ Labat, of Ocean Dynamics, Kitarogradsky

11:00 A.M.

Yaglom - Rossy was - talkman, 1953 | Soviet Acad March 1953
Slicky - Prof. Semo

Ziminograd hill - invited to visit - Sci. Lab. of Acad. of USSR
70 km from Moscow

Gardin - at obscurity, has studied Kettle, 1 part, + Kettle
part.

Frederickson - Hydrology of evaporated fluid, Has Kettle, and
a lot of things

Gilby - ^{water} turb. power generated by turb. with ^{not sufficient}
cost for heat in ^{part on} Kettle (also betw 100-400 km) effect not so to

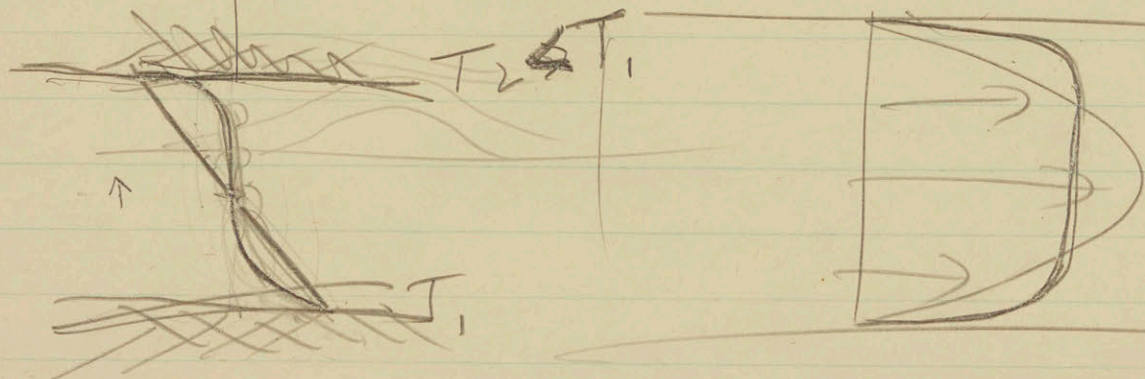
Archer - ^{part on} about exact value of our time part. part of
Kettle means behind obstacle in still stopped
straps. about 1939-1940.

Used steam from exp. with

Q₂

Q₁

$\frac{1}{2} - 1$



NEWTON, MASSACHUSETTS

LASELL 7-7930

* MISS ANDREASON

MR. CHARNEY

Bugaev - Chief of Forestry. June 5th
Left for Paris 2 days ago. - can't go there with the
(Lomon) without other to Ob'ekt.

Pillbury $\gamma = 10^6 \text{ cm}^2 \text{ sec}^{-1}$

Stockmann

Hydrophysical Inst.

~~Struf~~

Oredenski. (Tides)

Sek. org. - Zensovich (Waves)

Sicky : 1. Solve initial value prob. for constant acoustic-grav waves - without str.
2. Study all three of Cases of dynamic processes independently.

31

~~20~~
20
—
5
5
5
5
5
5

УИЛФМ

Kolesnikov:

Student study \$5 1/2 year.

Specialist ^{Phys} 4th year.

They write their diploma in last year

Chair of phys. of oceans and land water.

Distinct from chair of oceanology - more descriptive (Kort)

Same prelim. course as for other phys.

(1st year) gen. geophys. as in Str. Phys.

(2nd year) ~~Special~~

Special parts of Earth's dynamics - different lecture, Lode - Lofstedt = Pomerantzev

Special parts of hydro.: turb, viscosity, not included in other

1. Physics of sea - Dynamics (Currents, waves, Tides) Thermodynamics (temperature, density, heat balance, heat exchange, salinity, evaporation, heat exchange)

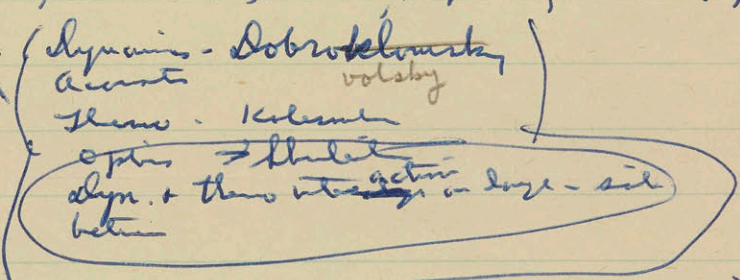
Acoustics of sea Optics

2. Phys. of atmosphere (Luchinskii, Chudin)

3. Desc. Oceanography - Orlov

4. Marine climatology - Blinn (Jid)

5. ~~Climate~~ sea proximity (ice, water temp, density of water, ice drifting, thickness of ice, wave) the rest by Koles.
 ↑ Dobrotchenko



Res. of Inst. Oceanography and Land + Sea Ocean.

St Sredjanski

From app. group.

Degree 3 1/2 years

Send reports to prof. Shintani

1. Polit. Ec.
2. Biol. + Hist. waterlain
3. Hist. Phys.
4. Foreign lang.
5. Chem.
6. Drawing
7. Practical studies - medical practice
8. Higher math.
9. Meth. with Phys. Tschonov + Samarski
10. App. math.
11. Gen. Phys.
12. Atom. Phys.
13. Nuclear Phys.
14. Gen. mech.
15. Hydrodynamics
16. Thermodynamics + statistical phys.
17. Electrodynamics
18. Quantum mechanics
19. Radio technique
20. Laboratory

Specialized Subjects

1. Gen. Geophys. (Atm. - Ocean - Earth) - Intended by Shintani + Chugan
2. Gen. Course Chem. Phys. (Dyna. Therm. Elec. Optics) Chugan
3. (1) Thermodynamics + (2) Dynamics (2 semesters) Shintani
4. Theory of pred. (1 term NWP - 1 term gen. pred) Shintani + Kobayashi
5. (1) Hydrodynamics (2) Theory of turbulence (2 sem) Okubo
6. Synoptic met. (2) Chugan
7. Instrumentation + Obs. (together with other courses - in parallel - begin semester of 3rd year - through 4 year - 5 year lab.)
8. Diploma ^{thesis} - may be a small theo. prob. or treatment of obs. data or development of instrument.
9. 2 summer months practice.

How many students?
lectures?

10-15 in each of the 1/2 - 0.5 -

where do students go?

U. of Wisconsin

To be cond. of sci. must pass 4 exams. } takes 3 years,
2 specialties and 2 gen. in philosophy + language.

Sometimes a theoretical student can do it in less.

one year for exam - two years for comment.

at end of third year, students apply. Faculty looks among the ranks
of student at accuracy + his ability.

To specialize (esp. in modern physics) good sight + good health required.

Diploma states

U.S.A. - Russia, Japan, ^{Tajik} Tadzhik, ^{Tajik} Belorussia (esp. Georgian),
Korea

Research at Wisconsin State U.

1. Infrared. clouds + air film over water film.
2. Atmospheric ozone within ground. film.
3. Atmospheric ozone. - Chugi - spectrophotometry.
4. Ionosphere (absorption of radio waves - Miroslava (cont. work))

Res. at M.S.U. in ocean.

More research still the tricky stuff.

in Baltic

For educ. purposes + for research they have small ship called "Vespa. Unio".
has Lab. ~~with~~ with instrument for hydro. exps. and making sea pressure.

Measurements.

1. Direct determination of temp in sea. (temp, velocity, ^{has vent} salinity, density, simultaneous records)

Many drifts in arctic and antarctic under ice.

2. Deep sea currents - not neutral floats but anchored buoys using current meters up to 6-7000 meters.

3. Radioactivity in ocean (both natural and artificial)

4. Essentially relate to generation + dissipation of waves. by modeling but by direct observ. Record fluctuations of wind, ocean pressure.

NOT in regard to tide movements.

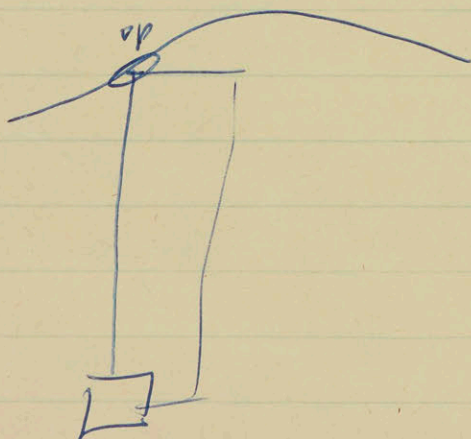
Could determine energy transfer to sea through + pressure.

Shallow waves in arctic energy transfer by + and long waves + wind + storm give most energy.

First measurements show that energy is transfered through wind pressure.

First record of pressure.

p'w'



Work in press. Will be publ. in Deep Sea ^{Exp.} Vol. 1.

5. Kelvinian waves in exchange process in sea. Int. friction and exchange currents.

in order to exclude of best of now.

1. Bring cloud pictures to Prof. Schiebel
2. Ask Christian about cloud physics.
3. Show Schiebel general proof of Foyler's result.
4. Make effort to see oceanographers (esp. Thomson, Swick)

27 May, Saturday Left 12:15 - Hans + Violette saw us off. ^{Graded papers, read them, prepared and called every student to visit the office}
 Arrived Paris Only 11:30. Bus to Hotel Stansel in Montparnasse. Walked to St. ^{to office}

German. Had supper.

28 May ^{Sunday} Met Mary: met Avery, Ruth, Annette, David, Michael. They drove us to Le Bourget.

First ^{of} ^{the} ^{depart} ^{ment} ^{leaves} for Rome 12:30 P.M. --- Put down at Caprice airport - Le Bourget P.M.

Met by Oberster + Schick - Embassy car - lunch - Went with Oberster + Schick in car to hotel.

Went to Pagny - with Schick - did walks - Oberster + Fournier visit. One lunch with Bergin ^{many for Bergin's interests - keep Foyler - Oberster - Bergin - Foyler}

29 Monday 29 - J. P. Ah. ^{thing}. Bergin, Farnell

30 June 30 Saturday P.M. Kessler in evening. Letter d. 1944.

31 Wed. 31 Very heavy rain. Looked better.

Thu 1 Kessler Kessler Grand.

Fri 2 Kessler. La Belle Heloise.

Sat 3

Introduction no. of papers being made in NWP form.
 2-level plan of work. Section. also poss. papers. about 5000 sq. ft.
 This test of applying poss. used on heavily constructed exp. cell.

Guests: Heloise. cell is over pub with a phys.?

- 2 Friday - ^(clerk) ~~Acrodontzia~~ - La Ball Helms etc.
- 3 Sat. Stayed in hotel. Talked to chess players - Telbar - Lyden.
- 4 Sun. ~~Leam~~ - ~~Victrol~~, ~~La Ball Helms~~, ~~met~~ ~~with~~ ~~them~~. Ballet.
- 5 Mon. ~~Dick~~ ^{+ Galtzev} ~~in room~~. ~~Lunch~~ at 12:00 - ~~Talked~~ with ~~3:00~~, ~~with~~ ~~them~~ ~~even~~
- 6 Tues. ~~Stuck~~ + to ~~guy~~ in ~~evening~~ ^{morning, 11:30} - ~~lunch~~, ~~with~~ ~~them~~. Ballet with ~~them~~.
- 7 Wed. ~~very~~ ~~much~~. ~~Kobs~~ - ~~Stuck~~, ~~afternoon~~ ~~Elin~~ + ~~lunch~~ ~~with~~ ~~them~~ - ~~dinner~~ with ~~father~~ + ~~cousin~~
- 8 Thurs. ^{Met by} ~~Kondratiev~~ - ~~Yoshi~~ (Guy Flewman + ~~son~~ ~~and~~ ~~daughter~~ - ~~son~~ ~~of~~ ~~her~~ ^{Evgenie} ^{Schmuck})
- 9 Fri. ~~Kondratiev~~ - ~~Budko~~ - ~~Yoshi~~ et al. - ~~evening~~. ~~Talk~~ ~~with~~ ~~Kondratiev~~ ~~in~~ ~~room~~.
- 10 Sat. ~~Budko~~ - ~~Peterhof~~ - ~~lunch~~ 3:30 - 5:30 at ~~Life~~ ~~East~~.
- 11 Sun. ~~Hermitage~~ 1:30 - 4:30 ~~also~~. ^{civil} ~~day~~ at ~~Kondratiev's~~ ~~book~~ with ~~Selvedes~~
- 12 Mon. ~~to~~ ~~Paris~~ - ~~Kondratiev~~ ~~to~~ ~~la~~ ~~Noon~~ ~~boat~~. ~~Puppets~~ in ~~even~~.
- 13 Tues. ~~Lecture~~ ~~Talk~~ ^{with people at MGI} 11:00 - 12:00. ^{with Yudin} ~~Prepared~~ ~~lecture~~ 12-12:45 ~~lunch~~ 1:00 - 3:00 ~~lectures~~ 3:15 - 4:45
- 14 Wed. ~~Morn.~~ ~~Elin~~ ~~to~~ ~~Peter~~ - ~~Paul~~ ~~Futurov~~. ~~afternoon~~ ~~Elin~~ ~~even~~ with ~~Andrej~~ ~~and~~ ~~others~~. ~~lectures~~ at ~~Paris~~. ~~met~~ ~~Schwartz~~ + ~~Ms.~~ -----
- 15 Thurs. ~~from~~ ~~E.~~ + ~~Jan~~ ~~to~~ ~~Peter~~ - ~~Paul~~ ~~Futurov~~ + ~~Jan~~ ~~them~~. ~~aft.~~ ~~drive~~ ~~down~~ ~~Novos~~ ~~passport~~ - ~~to~~ ~~Moscow~~.
- 16 Fri. ~~In~~ ~~hotel~~ - ~~walk~~.
- 17 Sat. ~~To~~ ~~Svinigorod~~ ~~observing~~.
- 18 Sun. 11:00 ~~Stone~~ ~~Flew~~ ~~Ballot~~: ~~afternoon~~ + ~~even~~ with ~~Suey~~.

Am. Ev. June 18

Discussion with Eugene + Lucy + Eugene's wife about freedom

Admitted ~~that~~ Dr. Flippo did not have permission - although he could see
by anybody who denied the restriction should be tolerated. He denied excessive
restriction. No sentence. Lucy in Selma 3 years till one day
after arrest of doctors. Condition good.

Lucy thought Clayell described + schizophrenic.

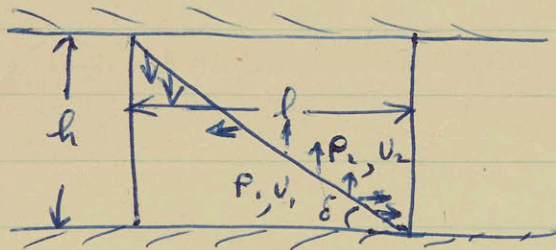
Desired to write. Didn't need anything for money.

PROF. NIKANDROV

$\left. \begin{array}{l} \text{CO}_2 \\ \text{Ag I} \\ \text{Pb I} \end{array} \right\}$
hail

1. Pursues work on gen. physics of clouds.
2. Separate group doing work on artificial stimulation. This group deals with ~~the~~ internal microprocesses. Lab + field studies on fog scattering, precip, hail suppression. Use radar to detect results.
3. Researches on ecological + climatological aspects of clouds.
4. Gutman is at least of high scientific rank of Akad. Sci. in USSR with Caucasus - formerly Elbrus exp.

$$U = \frac{U_2 - U_1}{2}, \quad k = \frac{2\pi}{b}$$



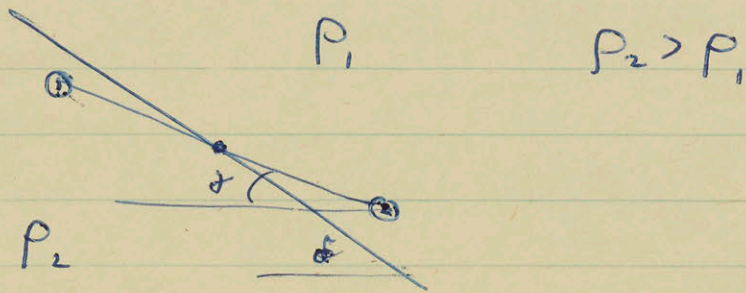
$$\alpha = \frac{\rho \omega}{U}, \quad \beta = \frac{kU}{2\omega}$$

$$\alpha = \frac{gh(\rho_1 - \rho_2)}{4\rho U^2} > A \quad (2 \text{ to } 3)$$

$$U < \sqrt{\frac{gh(\rho_1 - \rho_2)}{4\rho A}}, \quad \alpha > A \text{ for instability}$$

$U > 16 \text{ m/sec } (A=2)$ motion is stable

Kotchin where $\Delta T > \alpha (\Delta U)^2$ motion is unstable.
 Gogskelidze and $\Delta T < \beta \Delta U$ motion is unstable.

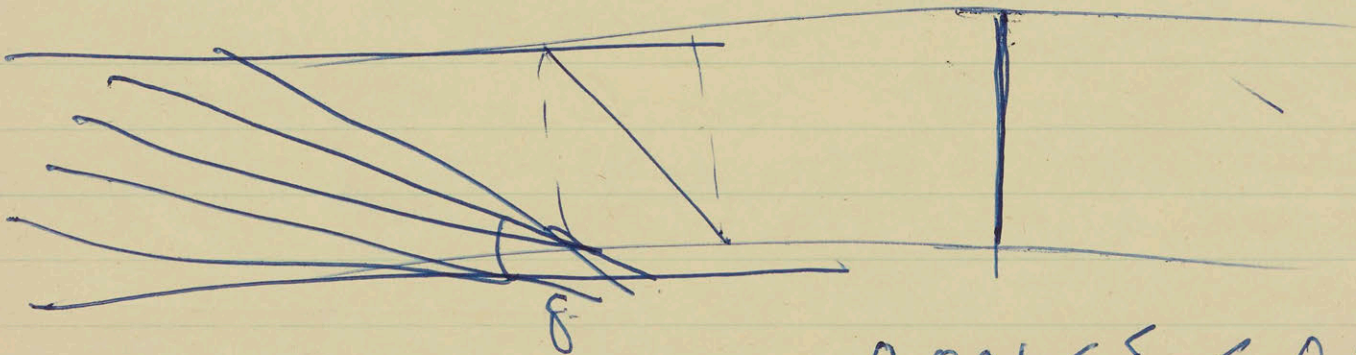
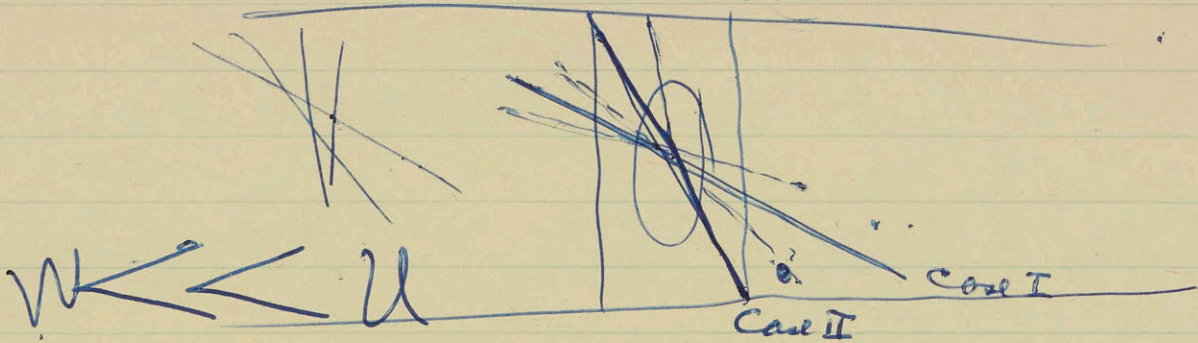


$\Delta P < 0$ if $\delta < \delta_c$, $\Delta P \leq 0$
 $\Delta P < 0$ " $\delta > \delta_c$, $\Delta P > 0$
 $\Delta P \sim P_2 - P_1$

ΔT increases
stability diminishes

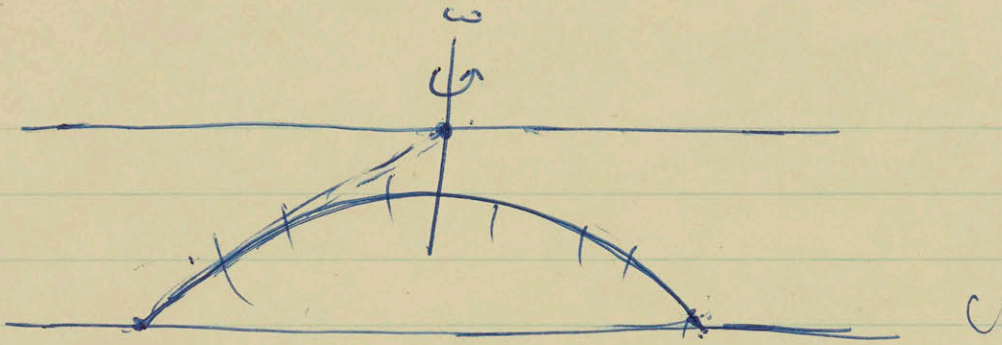
$\Delta U \sim \Delta P$

$\tan \delta = \frac{h}{l} = \frac{4\omega \rho \rightarrow U}{g(P_1 - P_2)}$



$0,001 < \delta < 0,01$

$$\frac{d \operatorname{tg} \delta}{dz} = 0$$



Прыжки Т.Т.О. ГГО

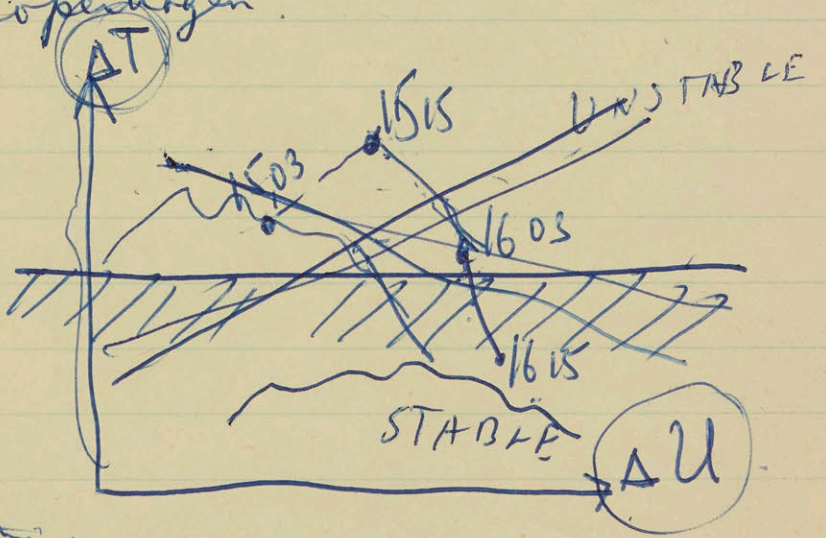
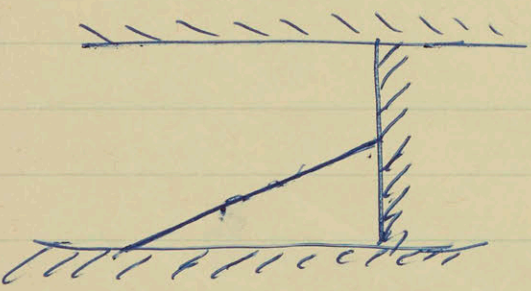
вып 13, 14 ~~и~~ 28 ...

~~was~~ paper 1940

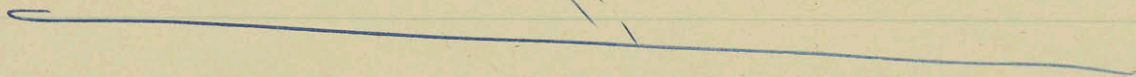
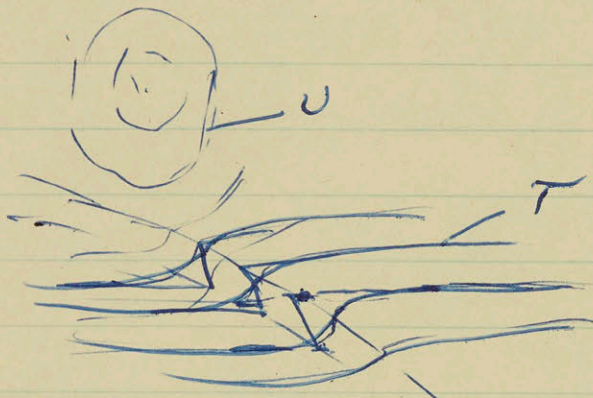
$$u \frac{\partial \Omega}{\partial x} + v \frac{\partial \Omega}{\partial y}$$

~~Arnt~~ Arnt Eliassen

(?) Eliassen (from Denmark)
 ↑ Univ. of Copenhagen

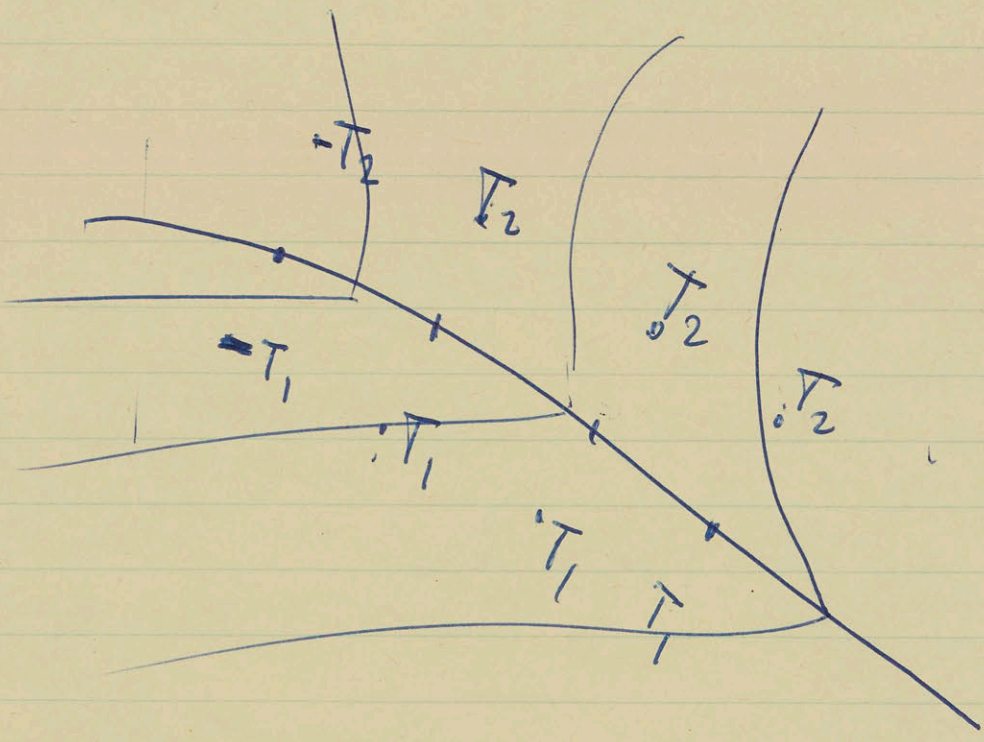


And Measured 00, at DT
 at sea level + 800 mb.
 700 also 500 mb. equivalent.



N

S



↓

Kibel + Yudin
work on satellite apps. Central Dept. of the

TRUDI

Yudin
10, 13, 14, 18, 23, 28, 31
1 1 1 1 1 1 1
1936 37 37 37 38 38 40

Belousov
Mashpovich

} Principle works on NWP at Met-Hydro Inst Moscow

then

- 1 C.G.O. working on 4-level model 850-500-300-200.
- 2 Band ends extrapolated from interior. Climate ext. ^{grow} process.
- 3 Biggest prob. in NWP is cloud at snow albedo prediction (snow on ground - albedo input)
- 4 Sky cover from satellite not. tells. Accepted ^{meteorological} usefulness.
- 5 Good but not direct relation with wind.
6. VO work on NWP at Univ. of Tennessee.

June 10

TIETPO

Budyko + T to Peterhof - ~~PIETPO~~ P. BOPE U₂ with E.

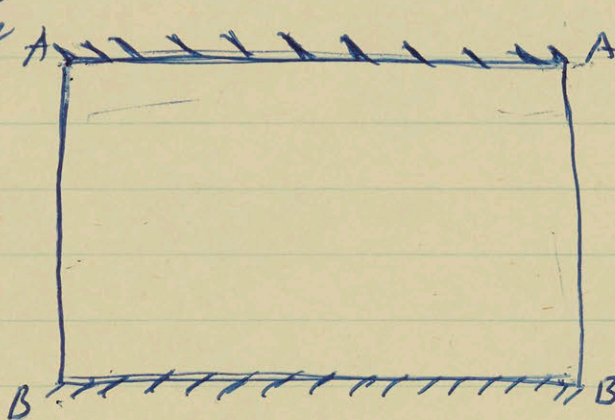
1. Has calculated that if ice in globe was melted it would ~~not~~ ^{not} freeze again, ~~because~~ the heat income would be so much greater because of the greatly decreased albedo. Although the other regions are covered by clouds, large amounts of solar radiation penetrate.
2. Plenty of vegetation - does little to help climate, whereas oceans in
3. some of these areas are very important.
3. Best people go into physics - nuclear electronics, meteorology is still much - & laugh at it in USSR. They said "they always seem to present yesterday's weather." Another said same thing.
4. Better relations - 1957 when he was in U.S.A. than now. U.S. - USSR do not only for good geography.
5. Don't collaborate in some common project especially now for hydro-met agency. Perhaps at Soviet things Acad. Sci. but still not likely. ~~Just~~ Not necessary, just meet at exchange sites & meetings. Don't set up common effort.
6. Why are jobs colder than equator? asked this June 9. It's hot.
7. likes Cyril letters of early 20th century, Chestnut, Galsworthy, Graham Greene - like Shakespeare.

Dr. Pyatigina
 Klubov
 Gordin
 Shvets
 Yudin

Mar 1957 - 22.5

Meets June 13

10:15 - 11:45



Hollman - Reiter

P
 ME

Kirk Bryant
Lorenz - Starr

1953 - 1955

1957 - 58

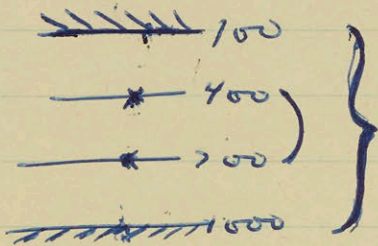
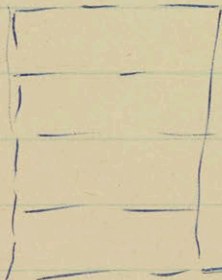
1955 - 56

anisotropy

2-level prim. eq.

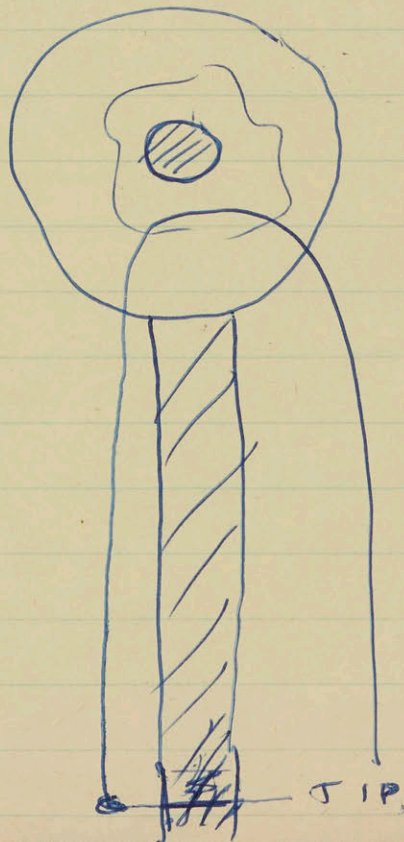
1956 Phillips - Long - Chy - van Ham

1955 56 - 57



$\pi = p$ R/p

$\frac{dp}{dt} = 0$



JIP

u', v', ~~w'~~ w

$$\oint_0^{p_0} (u - u_g) dp = 0$$

$$\frac{du}{dt} = f v'$$

$$\frac{dv}{dt} = -f u'$$

$$\frac{dT}{dt} = K \frac{w}{w}$$

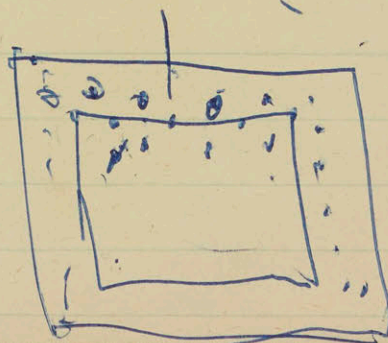
$$\frac{\partial}{\partial \zeta} \zeta^2 \frac{\partial u'}{\partial \zeta^k} + a^2 \Delta u' = -f_1$$

$$\frac{\partial}{\partial \zeta} \zeta^2 \frac{\partial v'}{\partial \zeta} + a^2 \Delta v' = -f_2$$

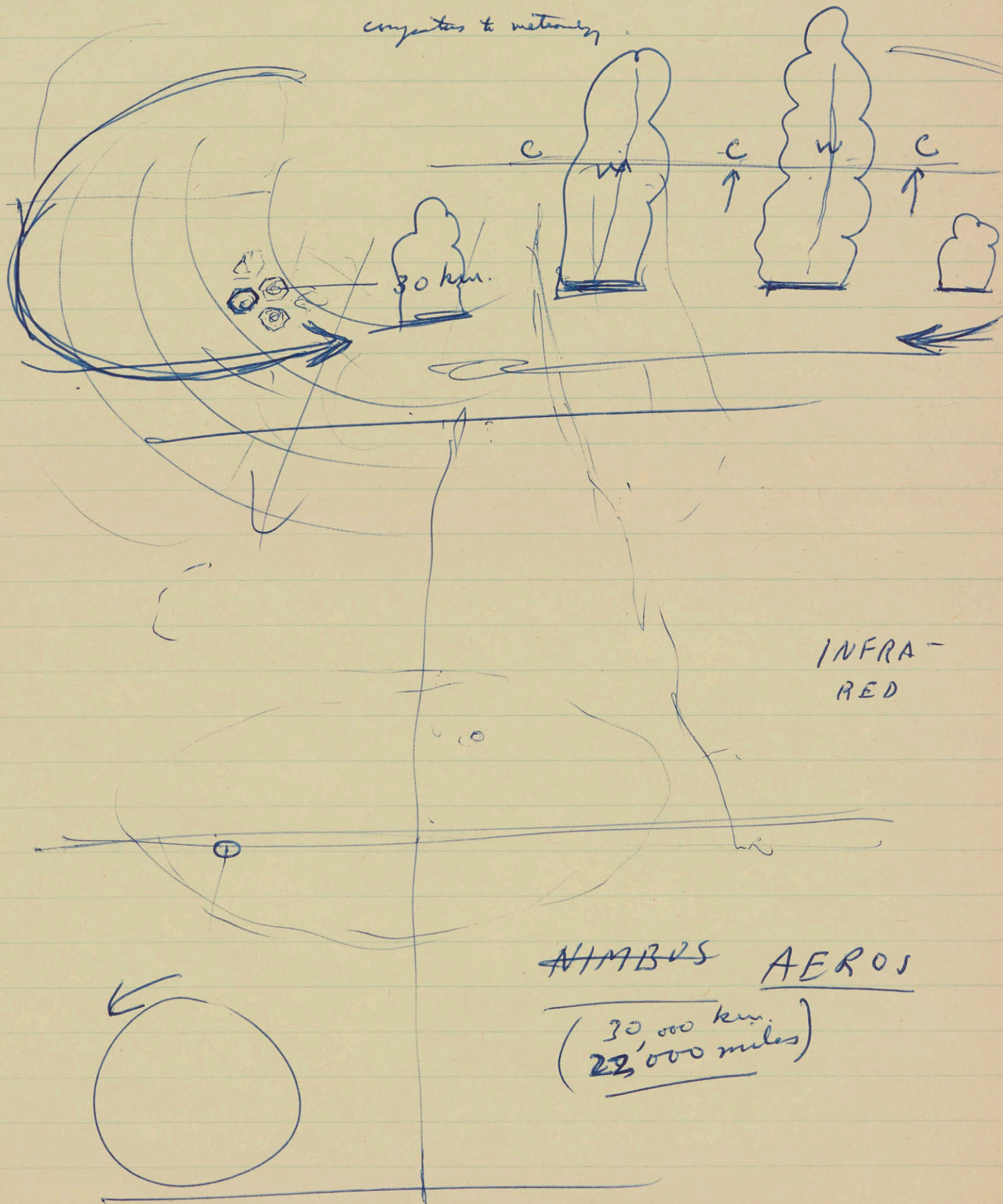
$$\zeta^2 \frac{\partial^2 \tilde{w}}{\partial \zeta^2} + a^2 \Delta \tilde{w} = -f_3$$

$$\int_0^{p_0} (u - u_g) dp = 0$$

$$\int_0^{p_0} (v - v_g) dp = 0$$



P.H. Evseyev. Sci. new corp. caten. Speculat - appl.
computes to metrology.



Дорогие коллеги! Я бы очень
хотел прочитать этот доклад вам
по-русски. Но к моему большому
сожалению ^{счит} я не выучил достаточно
русского языка, чтобы это сделать.
Так что я только передаю вам
привет от ваших американских
коллег по-русски, и продолжат
читать вам мой доклад
по-английски

ask jc to bring in Weatherwise,

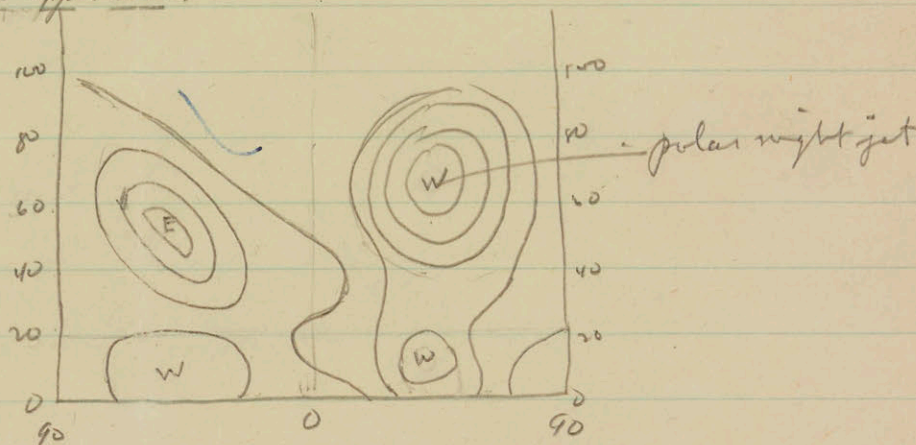
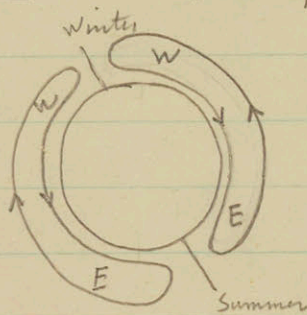
V. 8, nos 2,3,4

V. 10, no. 2

Lecture Inst. Atm. Phys., Moscow 30 May, 1961.

Prop. Energy on Planetary Scale from Atm. to Upper Atm.

1. Intro. Description of motions in upper atm.



2. Possible causes of breakdown of polar night jet

- Energy prop. from lower atm.
- Instability.

3. Question of vertical propagation

- Westerly winds
- Tides
- Solar chromosphere + corona

d. If energy density constant $\rho_0 u_0^2 = \rho_{100} u_{100}^2 = \rho_{100} c_p \Delta T$
 $\Delta T = 100,000^\circ$ absolute

4. Large-scale quasi-geostrophic dynamics

\bar{u} = zonal velocity

k = wave number = $\frac{2\pi}{\text{wave-length}}$

$H = \frac{RT_m}{g}$ = scale height

$f = 2\Omega \sin \varphi$ = Coriolis parameter

D = characteristic vertical scale

$Ro \equiv \frac{k\bar{u}}{f} \ll 1$

$Ri \equiv \frac{gD \frac{\partial \bar{u}}{\partial z}}{\bar{u}^2}$

$\chi = \frac{p - p_s}{\bar{p} f}$

$\nabla = \left(\frac{\partial}{\partial x}, \frac{\partial}{\partial y} \right)$

$\left\{ \begin{array}{l} Ro < O(1) \\ Ro^2 Ri \geq O(1) \end{array} \right.$

$\left\{ \begin{array}{l} Ro^2 Ri \geq O(1) \end{array} \right.$

$N^2 = g \frac{\partial \ln \bar{\theta}}{\partial z}$

$$\frac{\partial \chi}{\partial z} \approx \frac{g}{f} (\ln \sigma - \ln \sigma_s), \quad \nabla \approx ik \times \nabla \chi$$

$$\left(\frac{\partial}{\partial t} + \nabla \cdot \nabla \right) \left[\nabla^2 \chi + f + \frac{f^2}{\rho_s} \frac{\partial}{\partial z} \left(\frac{\rho_s}{N^2} \frac{\partial \chi}{\partial z} \right) \right] = 0$$

$$\chi' = \bar{X}(z) e^{i(kx+ly - \omega t)}$$

$$(\bar{u} - c) \frac{d}{dz} \left(\frac{\rho_s}{N^2} \frac{d\bar{X}}{dz} \right) - \left[\frac{d}{dz} \left(\frac{\rho_s}{N^2} \frac{d\bar{u}}{dz} \right) + \frac{\bar{\rho} (k^2 + l^2)}{f^2} (\bar{u} - c - u_c) \right] \bar{X} = 0$$

$$u_c = \frac{d\beta}{k^2 + l^2} = \text{constant}, \quad (\text{eval'd on sphere}) \quad (\beta = \frac{df}{dy})$$

$$Q = \left(\frac{\rho_s}{N^2} \right)^{\frac{1}{2}} \bar{X}$$

$$n^2 = n^2(\bar{u}, N^2, c)$$

$$\frac{d^2 Q}{dz^2} + n^2 Q = 0, \quad n^2 = - \left\{ \frac{(k^2 + l^2) N^2}{f^2} + \sqrt{\frac{N^2}{\rho_s}} \frac{d}{dz} \sqrt{\frac{\rho_s}{N^2}} \right\}$$

Analogue to eq. of wave prop. in med. of variable index of ref. $\left| + \frac{N^2}{\bar{u} - c} \left\{ \frac{\beta}{f^2} - \frac{1}{\rho_s} \frac{d}{dz} \left(\frac{\rho_s}{N^2} \frac{d\bar{u}}{dz} \right) \right\} \right.$
 or to one-dim trans. of particles in one-mechan.

5. Trapping and transmission:

a. If $n^2 > 0$ get $\chi' \sim e^{i(kx+ly - \omega t)} e^{\pm i n z}$ external waves
 If $n^2 < 0$ get $\chi' \sim e^{i(kx+ly - \omega t)} e^{\pm n z}$

b. Must take + sign in transmitted wave and minus sign in trapped wave.
 Sommerfeld radiation condition.

c. Wentzel-Kramers-Brillouin method.

d. High cutoff for transmission $0 < \bar{u} < \frac{\beta}{k^2 + l^2 + \frac{f^2}{4H^2 N^2}}$

e. Show diagrams for source, water, and antenna.

6. Non-linear effects,

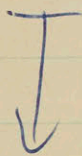
a. Momentum eqs.

$$\left[\frac{\partial}{\partial y} + \frac{f^2}{\rho_s} \frac{\partial}{\partial z} \left(\frac{\rho_s}{N^2} \frac{\partial}{\partial z} \right) \right] \frac{\partial \bar{x}}{\partial t} = - \frac{\partial^2 M^2}{\partial y^2} - \frac{f^2}{\rho_s} \frac{\partial}{\partial z} \left(\frac{\rho_s}{N^2} \frac{\partial B}{\partial z} \right)$$

$$M \equiv \overline{u'v'} = - \overline{\frac{\partial x'}{\partial t} \frac{\partial x'}{\partial y}}$$

$$B = \overline{\frac{\partial x'}{\partial x} \frac{\partial x'}{\partial z}}$$

In problem consider $M \equiv 0$ and B is indep. of y .



Consider continuity eq. $\bar{u} \frac{\partial^2 x'}{\partial x \partial z} - \frac{\partial \bar{u}}{\partial z} \frac{\partial x'}{\partial x} + \frac{N^2}{f} w' = 0$

Mult by $\frac{f p'}{N^2} = f^2 \frac{\rho_s x'}{N^2}$. Get

$$\rho_s \bar{u} \frac{f^2}{N^2} B = \overline{p' w'}$$

shapiro in
Lomizing's lecture

b. Energy eq.

$$\frac{d}{dt} \int_{\tau} \left[\frac{1}{2} \rho_s (\nabla x')^2 + \frac{1}{2} \rho \frac{f^2}{N^2} \left(\frac{\partial x'}{\partial z} \right)^2 \right] d\tau$$

$$= - \int_{\tau} \rho_s M \frac{\partial \bar{u}}{\partial y} d\tau + \int_{\tau} \rho_s \frac{f^2}{N^2} B \frac{\partial \bar{u}}{\partial z} d\tau + \int_{\tau} p' w' \Big|_{z=z_1}^{z=z_2}$$

Get $\rho_s \frac{f^2}{N^2} B \frac{d\bar{u}}{dz} = \frac{d(p' w')}{dz}$

$$\int_{-\infty}^{\infty} \psi^* (\bar{u} - \epsilon) (\psi'' - k^2 \psi) - \frac{\bar{u} \psi \psi'}{\bar{u} - \epsilon} \approx 0$$

Hence $\frac{d}{dz} \left(\frac{\rho_s B}{N^2} \right) = 0$

or $\frac{\rho_s B}{N^2} = K$

↑ Hence $\overline{\rho' w'} \sim \bar{u}$

2. Stability: $\rho_s = \rho_0 e^{-z/H}$, $N^2 = \text{constant}$

$\psi = e^{-z/2H} \chi$

$g' = \nabla^2 \psi + \frac{f^2}{N^2} \left(\frac{\rho_s}{\rho} - \frac{\psi}{H} \right)$, $F = \nabla^2 \psi + \dots = 0$

$\int_{\tau} g' \frac{d\psi'}{dt} d\tau = \int_{\tau} v'^2 \frac{\partial \bar{g}}{\partial y} d\tau - \frac{f_0^2}{N^2} \frac{d}{dt} \int_S B_0 ds$

Neq. Cond. for instability $\frac{\partial \bar{g}}{\partial z} = 0$

$g = f + v'^2 \chi + \frac{f^2}{\bar{\rho}} \frac{\partial}{\partial z} \left(\frac{\bar{\rho}}{N^2} \frac{\partial \chi}{\partial z} \right)$

$\left(\frac{\partial}{\partial t} + \bar{u} \frac{\partial}{\partial x} \right) \frac{\partial \chi'}{\partial z} + \frac{\partial \chi'}{\partial x} \frac{\partial \bar{g}}{\partial z} = 0$

$\psi = e^{-z/2H} \chi$, $\bar{\rho} = \bar{\rho}_0 e^{-z/H}$, $H = \frac{RT_m}{g}$
 $\psi = \bar{\Psi}(y, z) e^{i k(x - ct)}$

$-\bar{\Psi}^* \left[\bar{\Psi}_{zz} - k^2 \bar{\Psi} + \frac{f^2}{N^2} \left(\bar{\Psi}_{zz} - \frac{\bar{\Psi}}{H} \right) + \frac{\bar{g}_z}{\bar{u} - c} \bar{\Psi} \right] = 0$

$\bar{\Psi}(0, z) = 0$, $\bar{\Psi}_z(0, z) = 0$, $\bar{\Psi}_z + \frac{\bar{\Psi}}{2H} - \frac{\bar{u}_z}{\bar{u} - c} \bar{\Psi} = 0$

$\int_{-D}^D \int_0^{\infty} \left\{ |\bar{\Psi}_z|^2 + \frac{f^2}{N^2} \left(k^2 + \frac{1}{9H} \right) |\bar{\Psi}|^2 + \frac{f^2}{N^2} |\bar{\Psi}_z|^2 \right\} dy dz + \int_0^D \frac{f_0^2}{N^2} \left(\bar{\Psi}_z \bar{\Psi}^* \right)_0 dy = \iint \frac{\bar{g}_z |\bar{\Psi}|^2}{\bar{u} - c} dy dz$

Л. А. Шлику

Дикий

$$\epsilon_i \int_{-D}^D \left[\int_0^{\infty} \frac{\bar{g}_y |\Phi|^2}{|k-c|^2} dz - \frac{f_0^2}{N^2} \frac{(\bar{u}_z)_0}{|k-c|^2} |\Phi_0|^2 \right] dy = 0$$

$$\bar{g}_y = 0.$$

Lecture II. of Moscow May 31, 1961 3:30 P.M.
Hydrodynamic prediction of electron impact in the U.S.

1. Introduction. Дорогие коллеги!

Я бы очень хотел прочитать этот доклад вам по русски but unfortunately my Russian, unlike your English, is entirely inadequate for the occasion - - -

Please excuse also lack of preparation. Was not aware that I would be asked to lecture formally.

2. Brief History of MWD in the U.S.

a. Beginning of Princeton Project. Zvonyskin, von Neuman, Rossing. L.A.S. machine

b. Prob of comp. stab. Why cyclones don't move with speed of sound. Courant - Levy - Friedrichs condition. Hess approx. connected with prob. of baroclinic instability. Richardson's failure. Thought then that grav. system more stable than primitive eqs.

c. Evin presents (Johns)

d. L.A.S. machine. Finished 1951. 2, 3 level presents 1951-52. 4 level 1953 (never published).

e. Princeton eq. 1954

f. Failure of 5-level primitive eq model 1955. Begon below eq model 1955.

g. Phillips^(C) exp. 1955-56 Results. Ch.-Ph. - Long exp. 1956

h. Completion 1958.

i. Pred. of cloud and precip 1957

j. Small-scale phenomena. Consider. Mellor + V. At (Kazhdan) 1959 - dry
wint. seminar 1960 - Chng. Op. - Chng. 1960 - month at type

1. Brief history of NWP in U.S.

a. Owing to lack of preparation can only give a sketch of general outline.

b. Beginning of Princeton project. Zworykin, von Neumann, Rossby

c. Problem of comp. stats. Why cyclones don't move with speed of sound.

Richardson's failure - comp. instab.

d. Eniac forecasts 1949, I. G. S. machine printed 1951. First Johnson forecasts: 2-level, 3 level ^{level on 10M701} (1950's); Prim eq. 1954; Failure of 5-level model 1955. Balance eq model 1955-56.

e. Phillips exp. 1954-55.

f. Longmire 1956, 57-58 San Jose 2-layer prim. eq.

g. J/NWP began 1954 - first for other under 10M701 - the other 1955.

Begin using barotropic at 2-level prediction. 1955 - developed automatic ^{data} analysis scheme. Extended prediction to 4 days. The 4 day prediction is basis for 30-day prediction.

h. ~~work~~ Experimental prediction with multi level models. Extensive study of finite-difference schemes. All use of relaxation scheme for solving elliptic eqs. except for first Eniac prediction. Long. pred. of cloud at rainfall.

Webster + Vitt

Richardson - unit constant - top layer starting

3. Future hydrostatic approx

Ogund ~~change~~

most ~~correct~~ - ~~simple~~ ~~in~~ ~~the~~ ~~past~~ ~~years~~ $\frac{\partial \rho}{\partial t} + \nabla \cdot (\rho \mathbf{v}) = 0$

$$\rho a \frac{d\mathbf{v}}{dt} = -\nabla p$$

Other meso-meteorological studies such as Esty's study of ^{divergent} wind at tropopause level - finite layer. ~~As a result~~ Prediction of baroclinic movement.

Leitch - 4-level baroclinic prediction - carried for 6 months.

Too much computing - ~~but~~ ~~is~~ ~~it~~ ~~worth~~ ~~the~~ ~~cost~~. Herndon of which (was)

IBM 701 = I ~~STRELA~~

" 704 = 3 I ~~BESM~~

" 7090 = 15 I

" ~~STRETCH~~ = 150 I

LARK = 50 I

2. Some problems of constant velocity.

a. Use of particle eqs. Boundary conditions

Example: Homogeneous string with free end at $x=0$ and fixed at $x=a$ and Ω velocity U .

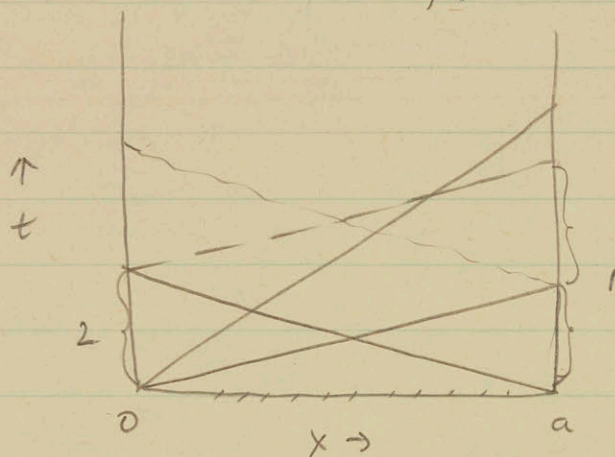
$$\left(\frac{\partial}{\partial t} + U \frac{\partial}{\partial x}\right) \left[\left(\frac{\partial}{\partial t} + U \frac{\partial}{\partial x}\right)^2 - gH \frac{\partial^2}{\partial x^2} \right] v + 4\Omega^2 \frac{\partial v}{\partial t} = 0$$

~~Characteristic~~ It is sufficient to consider

$$v = \sum V_i(x - c_i t)$$

$$c_1 = U$$

$$c_2, c_3 = U \pm \sqrt{gH}$$



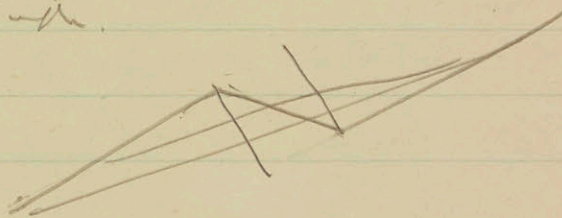
$$v = \sqrt{\frac{gH}{4}} \left(\frac{\partial v_i}{\partial x} \right)^2$$

$$\frac{\partial^2 v}{\partial x^2}$$

~~ψ and v at $x=0$ and $x=a$~~

normal velocity of potential velocity at $x=0$.

normal velocity at $x=a$.



b. Integrals of below given.

$\varphi = \text{rotational}$

$$\Psi = k \times \nabla \psi + \nabla \sigma \equiv \psi_\varphi + \psi_\sigma \quad \nabla = \left(\frac{\partial}{\partial x}, \frac{\partial}{\partial y} \right)$$

$$\left(\frac{\partial}{\partial t} + \psi_\varphi \cdot \nabla \right) (\nabla^2 \psi + \lambda^{-1} \sin \varphi) + \nabla \cdot (\nabla \sigma \sin \varphi) +$$

$$- g \equiv \frac{\partial \theta}{\partial p} (\nabla^2 \psi + f) + k \cdot \frac{\partial \psi_\varphi}{\partial p} \times \nabla \theta$$

$$\left[\frac{\partial}{\partial t} + (\psi_\varphi + \psi_\sigma) \cdot \nabla + \omega \frac{\partial}{\partial p} \right] \theta = 0$$

$$\left(\frac{\partial}{\partial t} + \psi_\varphi \cdot \nabla \right) \eta + \nabla \cdot \left[\eta \nabla \sigma - \omega \frac{\partial (\nabla \psi)}{\partial p} \right] = 0$$

$$\nabla \cdot (2 \Omega \sin \varphi \nabla \psi) + 2 \left[\frac{\partial^2 \psi}{\partial x^2} \frac{\partial^2 \psi}{\partial x^2} - \left(\frac{\partial \psi}{\partial x} \right)^2 \right] = g \nabla^2 z$$

$$\frac{\partial \theta}{\partial t} + \psi \cdot \nabla \theta + \omega \frac{\partial \theta}{\partial p} = 0$$

$$\nabla^2 \sigma + \frac{\partial \omega}{\partial p} = 0$$

$$g \frac{\partial^2 z}{\partial p^2} = -\alpha$$

Convergence criteria for lat. eq

$$g \nabla^2 z + \frac{f^2}{2} > 0$$

Convergence criteria for equator set

$$g > 0.$$

c. Inertia waves.

$$\text{Integrals of } \nabla^2 \psi = \frac{f}{\lambda} \psi + \nu \nabla^4 \psi$$

$$\frac{d\psi}{dt} = -\frac{1}{p} \omega p + \nu \nabla^2 \psi, \quad \nu = k \left[\sum_{i,j=1}^2 \left(\frac{\partial \psi_i}{\partial x_j} \right)^2 \right]^{\frac{1}{2}}$$

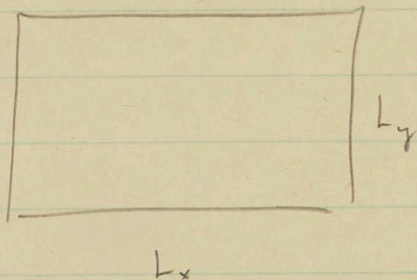
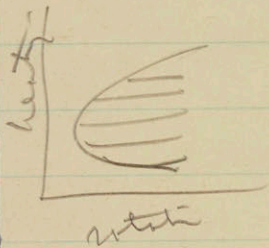
Clay - actual for 100 days

Plasticity index - breakdown with index factor.

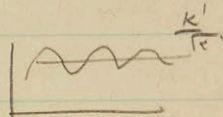
Soil properties results - actual for 60 days.

Platzen Formis series - very accurate.

$$\psi = \sum_{n=1}^M \sum_{m=1}^N a_{nm} \frac{\sin \frac{n\pi x}{L_x}}{L_x} \frac{\sin \frac{m\pi y}{L_y}}{L_y}$$



3. Future
a. Clay exp.



- b. Platzen actual
- c. Study results with three form series
- d. with logic selected on line cycles.
- e. Present sand eyes
work on that on high plane

NY OH
CA(014)2

$$\text{Ro}^2 \text{ Ri} = \frac{g D}{\Omega^2 L^2} \frac{g \frac{\partial \ln \bar{p}}{\partial z}}{g^2 / D^2} = \frac{g D^2 \frac{\partial \ln \bar{p}}{\partial z}}{\Omega^2 L^2} \sim 1$$

$$L^2 \sim \frac{g D^2 \frac{\partial \ln \bar{p}}{\partial z}}{\Omega^2}$$

Atmosphere

$$\sim \frac{10^3 (10^6)^2 10^{-7}}{10^{-8}}$$

$$L^2 = 10^{16}$$

$$L = 10^8 \text{ cm} = \underline{\underline{1000 \text{ km}}}$$

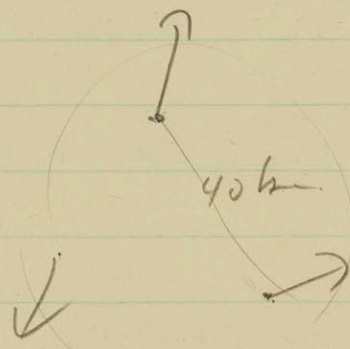
Ocean

$$L^2 \sim \frac{10^3 \cdot 4 \times 10^{10} \times 10^{-3}}{10^{-8} \cdot 2 \times 10^5}$$

$$= 2 \times 10^{13}$$

$$L = 4 \times 10^6 = \underline{\underline{40 \text{ km}}}$$

Shallow floats



↑ ↓ ↑ ↓

Good - Regards

Moscow

Stukhar

Rose (my 2 pts)

Mrs. Frijelson

Irving (elder)

J. Phy. Ch.

Kondetov =

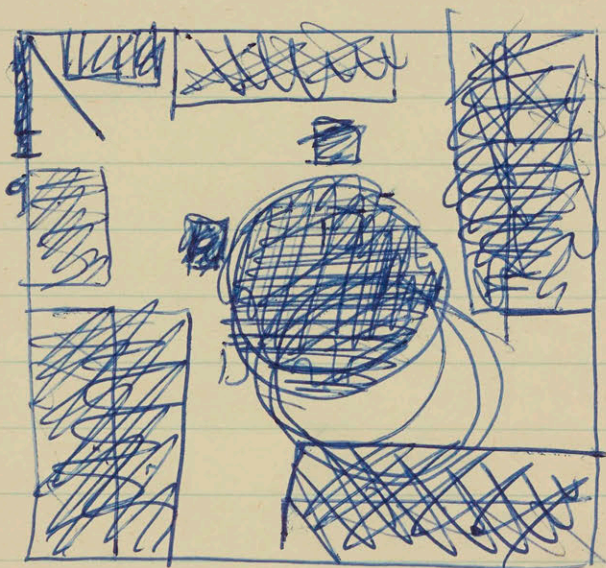
Mila Mala Bongova - best regards.

Budyko - amusing - 40 years.

Yudin

Shiffman - no English

Rachepova



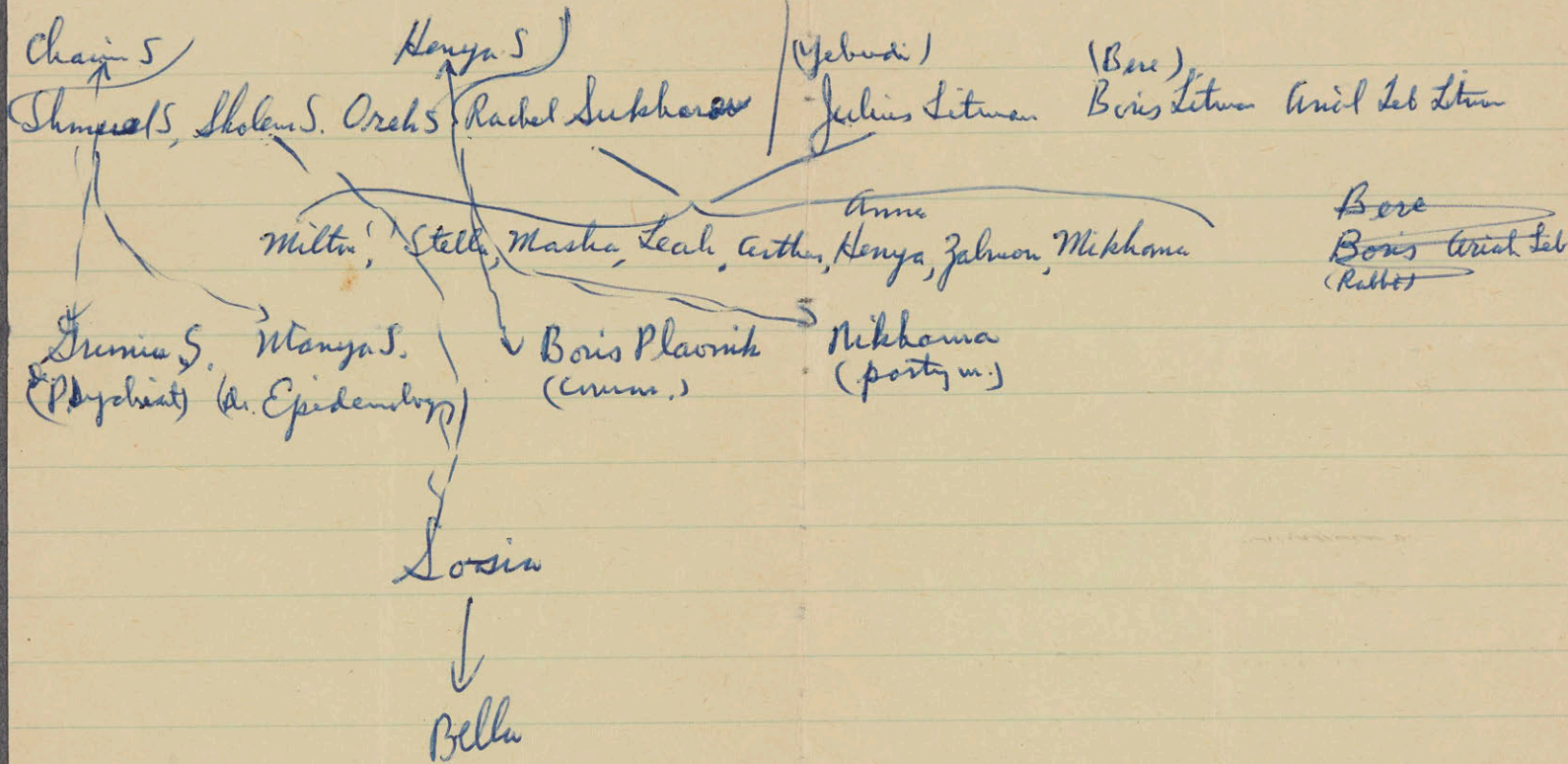
- July 21 Sa Prof. + Bus. wom. Assoc., Marcha Jacobs, Gander,
 22 Su London, shoes, Hampton Health, Painter, Spainiards, Steuarts in hotel,
 always surprised to see so many Anglo-Saxons. met Hank. Departure 1st cl.
 Dibs in story, Bus Old stores in Hampton, Bus
- 23 m. Cairo, oldies, Tawdriness of airport, Khartoum, Nile, mt. Kenya, Nairobi
 Hotel Stanley, Nat. Park, Bazaar, weevil, Indians, mosque
- 24 Tu. Bazaar, people, South Rift valley, dinner
- 25 Big Tech College, Kilimangoro, weevil, Argos, new house.
26. Museum. 'Old woman', food that Jesus, Fom, Nubi valleys, White Sea,
 Beach. Swims. &
27. walk in town
- 28 Departure, Big snail-tailed hawk. Cool weather with wind.
29. } Work done tonight. 1st class ticket.
30. } Good bed walk on train. Lecture
31. } Arrived at 1st station.
- Aug. 1
 2
 3
 4
 5
 6 Excavated 8-12 curia nests - blown - until 8-12 curia nests
 7 Museum. watch 8-12. Curia nests. at egg.

ФЛАХМАН

БАСМАНИИ ТУПИК

10/12 229

Feitel Persitski Layne Mingya



Goody says Hawaii
is expecting Kondecton of
end of sept. - All arrangements
made - no more notification.
Regards to Klaus Kondecton

2584
— 16
————
10326
20333
———
21336

~~Presents - Records, photographs, notes, books.~~

~~Sleeping pills ✓~~

~~aspirin ✓~~

~~razor & blades, shaving cream, tooth paste, toilet tissue~~

~~soap ✓~~

~~plug for bathtub ✓~~

~~shaving ✓~~

~~puttable iron~~

~~Stop newspaper (D)~~

~~Get shirts, shoes.~~

~~Bill print pass for salaries & for Russians~~

~~Pay do, Camp Bill~~

~~Call Gandy to inquire about U.S.P.~~

~~Ask about tent advance from Nat. Acad.~~

~~Paper book Wakab - dicta~~

~~Paper book records.~~

~~Kodachrome Color film~~

~~Call Nat. Stem~~

~~Write Aunt - get hotel - get tent address.~~

~~Robinson - check the machine thing~~

~~Get Henderson checks.~~

~~put tent book for journal~~

~~Call someone~~

~~Get copy of Chou - opera~~

~~Get Salletto pictures etc.~~

~~Get results of NACAS for Feb 3~~

Russian - Engl dict

motion picture film 4 rolls

vacuum

note book for journal

the two waly address.

Check on shipoo

~~Get someone~~

~~Buy papers of Henry.~~

~~Call Russian Embassy about telephone~~

~~Suggestive des. for mother~~

~~Develop film~~

~~Call Rowland about car~~

~~Check to Raymond. Willard~~

- 18 Left Boston 6:00 Arr. Kennedy 7:00 Left Kennedy 8:30 ~~arr Copenhagen~~
- 19 Arr. Copenhagen - Sv. Copenhagen Arr. Helsinki noon - checked in Hotel Carleton
^{parted} shopped at Marmorho, slept - went to Palmiers in evening.
20. Breakfast at Palace Hotel - St. Sophia Church - Train to Lemmings - Frenchman on train
^{parted} contract Finland - U.S.S.R., Nicky's camera - Vapuri - Kondratiev + Larsson -
 Hotel Europshaya. Sleeps - subway.
21. With Richls + Nicky to University. To wear things, obs. Budyko, Judin - Gutman - lunch.
 to Hotel ^{with Jerry}, Nicky with Jamie - Sleeps - Dinner at Kondratiev with Godson + Sam -
 Nicky - Vodka - Sun in Bay of Finland - about overnight at Kondratiev.
22. Breakfast with Kondratiev - to Univ. to pick up Sam to view satellite of optical sat.
 instead of Kondratiev to logh - to Hotel Europa - checked at hotel - walk to
 Winter Palace - Hermitage - to Volkonskii to Peter Paul Fort - back to hotel
 to Budyko for dinner - Samuil, Bokharo.
- Wed 23. With Kondratiev to airport - to viscum - meeting with Antonski - Hotel Ostankino -
 to U. Moscow - ^{minty - hotel courts} old acquaintances - with Chernin + Krogi - taxi - walk -
 finally home to hotel.
- Thurs 24. Difficulty with taxi again - ^{was - ferry steamer -} ~~status~~ - Spent at Nat. Exhibit - metro - nearly all
 Kamenchuk, Felgenbaum, Shapiro - tennis - photos - lunch - ^{= per} occupy -
 to hotel - prepared speech.
- Fri - 25. Breakfast, bus, speed, Public with Haron. - Speech - ~~for~~ discussion
~~comp~~ Miron - Phillips - Lunch with Valome - More speeches - Home in bus
 Married bus to Metrovich - Reception - Reed of Fisher + Vodka -
- Sat. 26. Slept in rooming - telegrams to Jerry + Sophie - Letter to Elina - Bell at
 Palace of Congress, Fountain of Bakshitskiy - Search for dinner - turned down at
 2 restaurants - had to get some brown help. to get food at supper. Elina's expressed
 leaving and better at conference. Nicky went with Jerry + Anita + Isvick, Stess
 Bella + Lucy's friend called, Larshkin

Others went to Zagnan.
June 27. ^{Washed} Belle came at 11:00 to Hill. Talked there a while. Went for walk with
Nicky in Botanical Gardens. Washed & returned at 2:45. Wrote a
letter. At 6:00 Nicky to football game. at 8:30 I to Lucy's.
Lucy went home. Here saw at length - in - for me with first catch
football game. Lucy came home. Lucy left home at 12:00 by cab.
Nicky arrived late.

June 28th. To the "Barré" with Olga. ^{Getman} Intention with pass.
Jenackunacharskya. Arrived. Drove to hotel - to Belle's home -
to cousins - home at 12:00.

June 29th. Up early to cafe. Lypun - Bohun - Yudin - Goodly's
back to hotel - to airport - purchases - to Paris - out in car to
Schastyn. Dinner - Hotel - ice-cream parlor - Hotel Stanislas

June 30th. Out at 1:00 to St. Germain to the Chapel - Nicky dinner -
Gardner - St. Michel - Hotel - ^{Hotel for Mary} - Veyennade - Hotel.

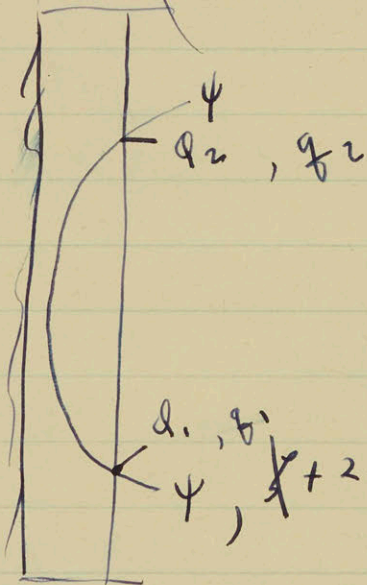
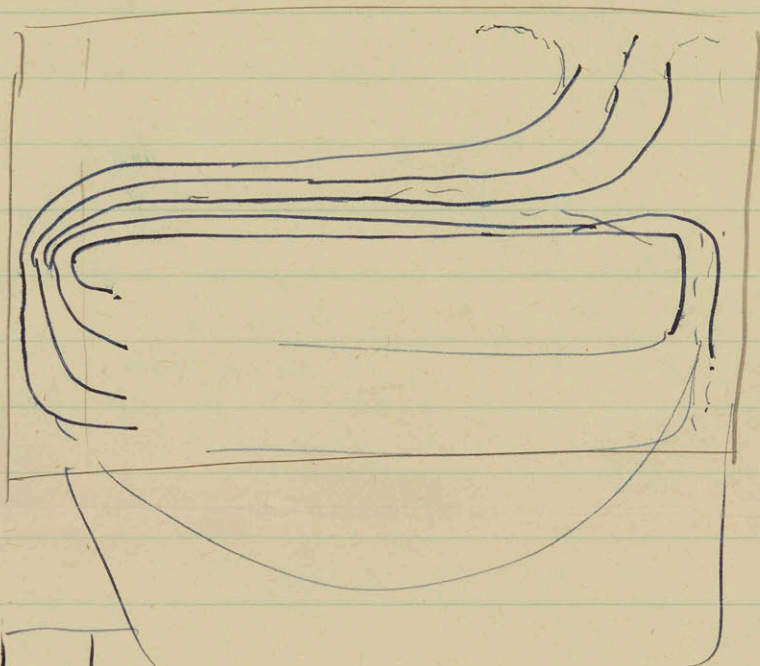
July 1st. Up early - to hotel agency to see about James trip to Besancon - to
Hotel - to Goodly - to Hotel. Early train. Left at 1:00.
Train lunch in Orleans. Arrived Tournai - to Institute -
Trains to Orléans to Paris home, to Hotel Bredon, dinner at
Hotel Bredon well - home all night.

July 2nd. Got out at 7:45, to hotel, to Cité Universitaire.
Conquits walk, to Bredon to Hotel to Institute. Dinner girls.
to Bredon to Company Adam, lunch to Paris. At 6:30.
Sleep. At the Hotel the night. Dinner, Hotel.

July 3rd. Up in morning. Out at 8:25 - Only 8:45 - Dressed plan.

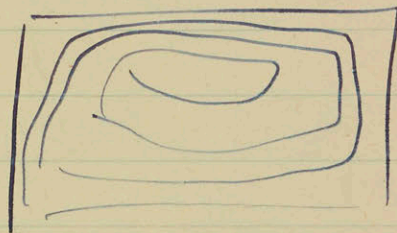
Would it be possible to meet to talk about
your work on the thermocline?

the work is in beginning state



$$\phi_2 \neq \phi_1$$

$$\psi + 2R \sin \phi = \phi$$



note
from
small map
small map

$$\chi = p\alpha + g\beta = \alpha\chi_\alpha + g\beta$$

$$\chi_\alpha = p$$

$$\sigma = \chi_x$$

Linear

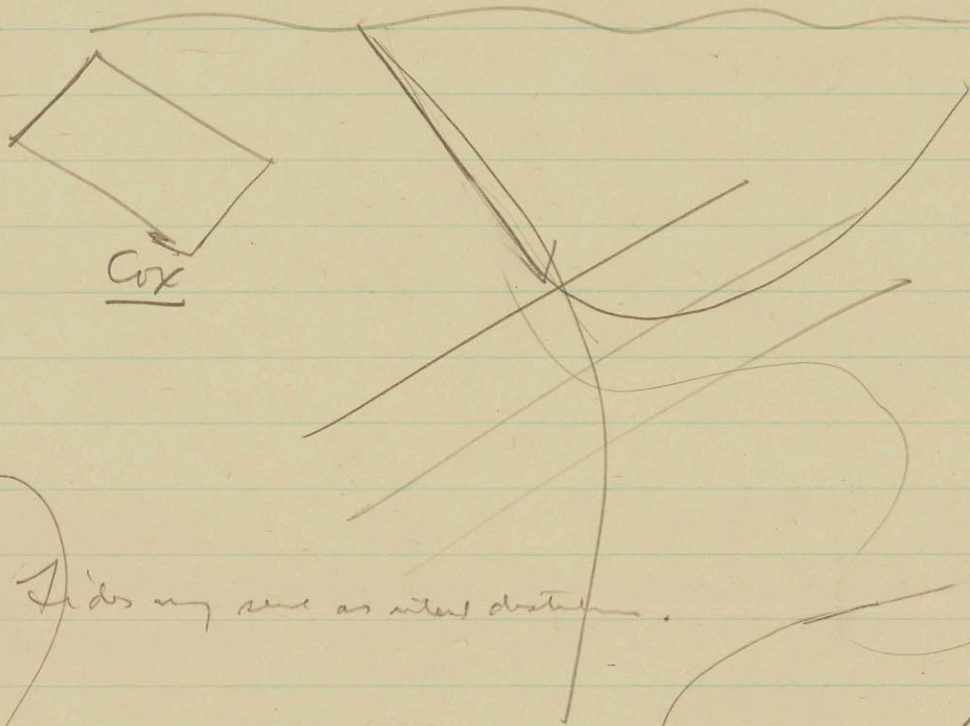
~~Chief of Hydromet. Serv.~~ - Oceanographic Institute.
Non-linear theory of the same

Resists from calc. difficult for phys. only

Yampolsky - sketch of ocean log, and Nat. - I tend waves

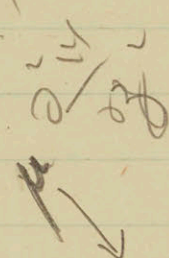
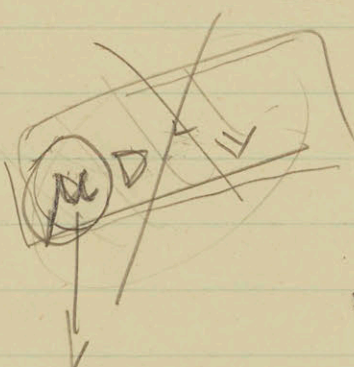
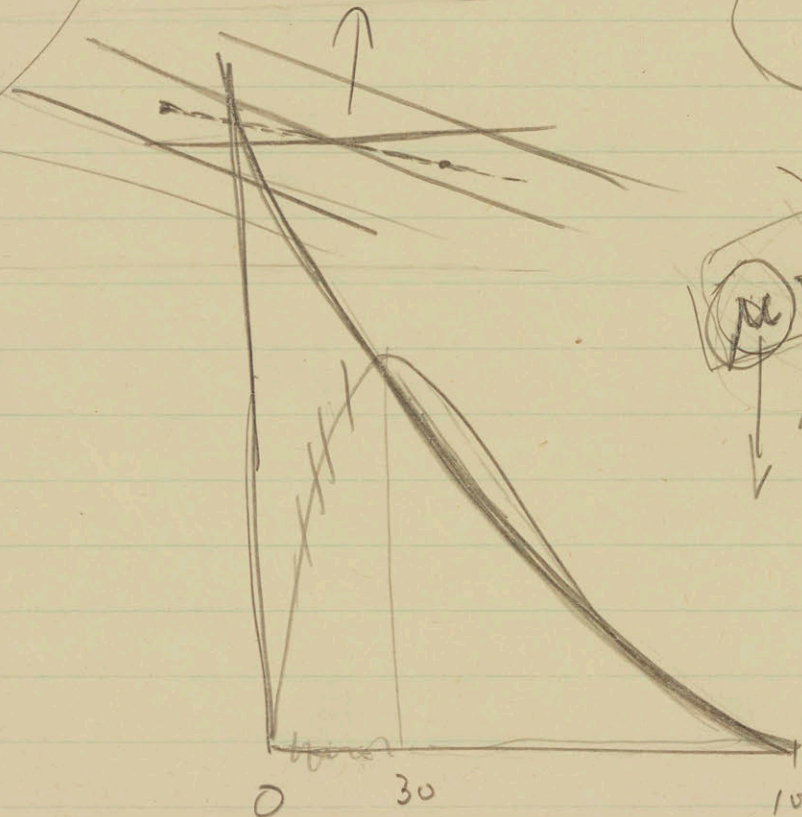
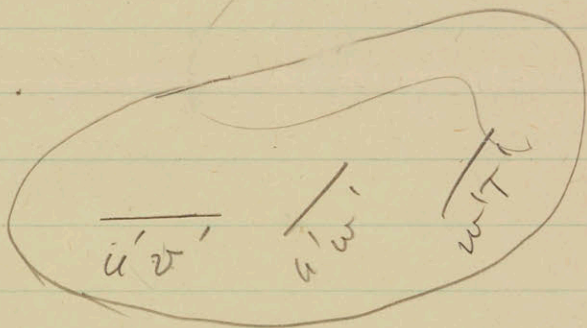


> 30-50 minutes



$\mu = 10^6 \text{ cm}^2 \text{ sec}^{-1}$

Does my sense as inter distance



$$\mu = \frac{\mu(x, y, z)}{m}$$

Meets 11:30 June 20.

Arbini suggests that heat transport by drift current ($\sigma \cdot \nabla p$) is important.

Linear theory of thermal fluctuations in some of gold stream according to

Sretensky

$$\frac{\partial v_r}{\partial t} - 2\omega v_s = -g \frac{\partial \zeta}{\partial r} / e^{-\alpha t} dt$$

$$\frac{\partial \zeta}{\partial t} + 2\omega v_r = 0$$

$$\frac{\partial \zeta}{\partial t} + 6 \frac{\partial v_r}{\partial t}$$

$$v_r = v_s = \zeta = 0 \quad t=0$$

$$\lim_{r \rightarrow 0} 2\pi r v_r = f(t)$$

$$A, B, Z = \int_0^{\infty} v_r(r, t) e^{-\alpha t} dt, \int_0^{\infty}, \int_0^{\infty}$$

$$A = \frac{-g \zeta}{s^2 + 4\omega^2} \frac{d\zeta}{dr}$$

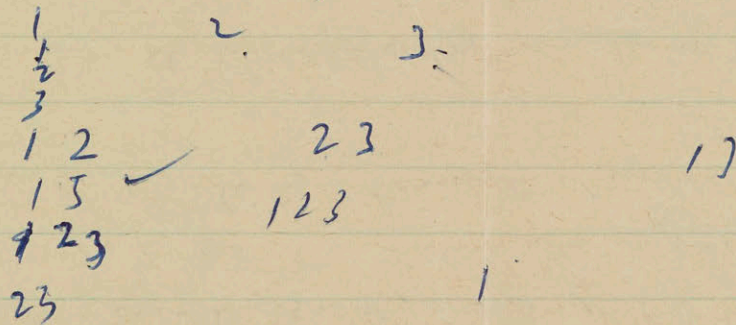
$$B = \frac{2\omega g}{s^2 + 4\omega^2} \frac{d\zeta}{dr}$$

$$r \frac{d^2 \zeta}{dr^2} + \frac{d\zeta}{dr} - \alpha r \zeta = 0$$

$$\alpha^2 = \frac{s^2 + 4\omega^2}{c^2}$$

$$Z = \frac{s^2 + 4\omega^2}{2\pi g s} K_0(\alpha r) \int_0^{\infty} f(t) e^{-st} dt$$

Past, Present, Future



Dr. Sretensky's report
to the Board

Dr. Sretensky's report
to the Board

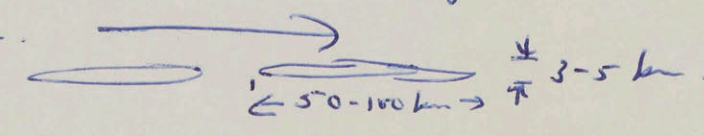
Dr. Sretensky's report
to the Board

Thurs. June 22 Plane took off 11:45 for ^{Tashkent} Samarkand (TU 104 jet)

Before accident with drunk ^{man} who insisted on offering us some champagne from his bottle. Tall, rather handsome man. Told Sam. that he got drunk. I am asked why he bought bottle if he couldn't drink it. Said he had too much money. Land grew drier and more parched as we flew south & east. Plane landed at 3:10 (Moscow time) Very bumpy landing - plane veered. I thought time blew out. Kept in ignorance for hours. Told to clean curtains over window - people didn't obey. Turned out much later that plane landed because of sand storm in Tashkent and somehow had time trouble. Right from trees torn to shreds, left field. Hatched in ^{bus} and brought to Karshi. Bumpy ride over tides. Right has well turn over. Ground parched. (Remains of mud birds. Picturoque Uzbeks, few chickens, dead donkey. How do they live? Drive done with hat on horn - people, chickens scattered to sides. Beautiful green birds with ~~red~~ yellow and brown markings on wings. Old man on donkey. ~~Primitve~~ Primitive people - modern steam railroads bumpy roads.

Came Karshi - V.P.P. Hotel room. Toilet foul odor like surrounded by urine. Smell of effal all around. Beds outside. Went for walk. Children at corner. Lovely, young girl, ^{in two} also had smile but that "I am twenty years old" comment, "I have twenty years" in crowd. Handsome, open-faced soldier of ^{the} single decent girl in two. Girl looked 15 - small, very pale but pretty. Dinner. Found outlet Good chocolate in ^{open-air} ~~along canal~~ restaurant in Stalin park of culture & rest. Met two along way there. Talked to them. Were objects of great interest. Back to hotel, at ~~intermittent~~ wait for ~~start~~. Talk with ^{Uzbek} ~~and~~ women who was town official - deputy to town council. woman, manager of all stores - woman slightly older if American woman some official positions. Very dramatic. Elina Remont, Mrs of Roosevelt. E. ~~spoke~~ tried out her Turkish - looked about size of Karshi. ~~Both~~ ~~stays~~ village, valleys, etc. etc. with - clean - nice. 50,000 yaps. They talk about ruins of S.F. (Christofor) who had also been found down. Wanted to give regards to him. Intermittent wait for bus to start. Finally bought a ticket and about 10:00 AM back to new 104 jet. and then to Tashkent. Arrived hotel 4:00 A.M. Tashkent time, 1:00 A.M. Moscow time, 7 hours later. Glad of experience.

Slept badly until noon Tashkent time. ~~From~~ D. ~~with~~ ^{and P. to} tickets back to Moscow at 10:00 for Samarkand. ~~Then~~ Gengji at ^{Gengji} Hydros - net with. ~~Several~~ ~~times~~ ~~on~~ ~~route~~ ~~returning~~, the jet stream, clear air turbulence, glacial streaks droppings of ^{ice} ~~ice~~ (as seen it) to glacier in Paris (5 km), 40 way flights. Use of synthetic joints (~~some~~ ~~pass~~ ~~water~~, ~~also~~, ~~found~~) in main ~~pieces~~. Mental Gengji, ~~drinks~~ ~~phys~~ ~~smooth~~ - ~~phys~~ ~~and~~ ~~with~~ ~~water~~ ~~ready~~. Gengji at ~~line~~ ~~at~~ ~~confronts~~ ~~with~~ ~~Hydros~~ ~~net~~ ~~fact~~. ~~Fierce~~ ~~beliefs~~ ~~in~~ ~~alt~~ ~~tho~~ ~~30~~ ~~years~~ ~~ago~~ ~~and~~ ~~W.P.P.~~ Bulayev also, moved out synthetic nets to make room for computer. (only ~~hand~~ ~~made~~ ~~prod.~~) (I have small ~~model~~ ~~I~~, expect M-20 - better than ~~best~~ ~~at~~ ~~computer~~ ~~best~~ - in ~~Baruch~~ ~~with~~ ~~them~~)

Tashkent. A patch of ~~hazy~~ ~~blue~~ ~~jet~~ ~~stream~~ ~~as~~ ~~well~~ ~~as~~ ~~seen~~. Ri. no no great ~~interest~~. ~~Strong~~ ~~pts~~ ~~over~~ ~~mountains~~. No turb. at center of jet stream. . Much turb. flying across, both with ~~became~~ ~~after~~ ~~it~~ ~~of~~ ~~fact~~ ~~over~~. Told his ~~biggest~~ ~~over~~. For case of ~~staying~~ ~~hazy~~ ~~at~~ ~~clear~~ ~~at~~ ~~old~~ ~~kind~~ ~~of~~ ~~fact~~ ~~at~~ ~~tropopause~~. ~~Get~~ ~~back~~ ~~with~~ ~~best~~ ~~over~~.

Huveners, finally, talkative now. Very complimentary to me. Translated all my papers.
Thakoz's story. At Thapen island there is shell-like ground. Zed stays because he had
too great guests to be more particular in his supply of glacial base. His students
noticed that he should be dropped on glacier - they had little of cognac. His face
gave him 2 plans to fly to 15-16 km. for further studies. Arrived us for
dinner next day. ~~That was~~

Found Tom of Fushet with shell-like - (?), (with for short),
also girl from north. Institute. Old and new - Zentor - etc.

Walk after dinner. Eaten eggs in roof garden.

Woman began, called ~~up~~ bread. Second added at party's drink.
Man began, wanted way to see water in Samukul. Fawara very
embarrassed.

Fri. June 20, Airtel began leavover in morning. Had to speak anyway.
next Airtel (regarding to stand) Iredinsky spoke on nerves (for a long) in sitting (flint)
point some very fine. Elegantly dressed - did time gentleman - spoke only 7 words.

Mon. June 19; Day at Central Inst. of Forestry.

Sat. June 18 - L.A.P. meeting.

Excellent equipment in app in studies.

Words Magnetically driven computer. Enormous control, 1024 words memory
 $\frac{2}{10000}$ sec. with the speed. Work towards better in printing out.

Wed. June 21

10 A.M. Tennis with Kitaygorodsky, Kamenkovitch, Felgenbaum at Red Army Park. First
Clay courts about 10 or 12. Practiced with Kamen. played with Felgen. wife came & stands.
F. brought shoes which he gave me. Size 61-75

12:30 - With Fam. to Tretyakov Gallery. Interesting exterior. Bond by post-rec.
paintings. Gerasimov, president of artists' union, is a painter. Vitrines contain spirit
U.S. American pretty mustard plaster in form of dollar bills on Chey. - Kim ~~Sted~~;
Eisenhower in tank pulling a decadent Nazi - general in a gun, the copy is
a dancer + dancer. Other cartoons in 4 rows. Some good sculpture.

3:30 Met Beloross + Blegen. Lunch with an array of food to us soon.

4:30-8:30 Trip to Arkhangelsk. ^{with Beloross, Blegen, Hull} Below are goods of Prince Melitopri - at afternoon.
Prince Yuzepov - Terraces, statues, Pushkin statue ^{+ done} with piano, slightly
imperial. Miscellaneous things. ^{Amateur, statue of Stalin. Called Beloross}
^{about trip U.S.S. send in photos. Most just 100 years. (Tilya) new car. Do they read or}

9:00-12:30 Dinner with Kamenk, Felgen + wife, Hans, Jack, Elmer + I.
Decision coming to U.S. Best trade they've had of about. Hank.
Fel. + wife had impression music + party. Hadl. Russ party. Lined
Keross + Felgen they had shot. Henry - all things American.
Had good salaries 300 for him 250 for her. He got 1/2 x 1500 for other work.
7000 at night. Paid \$5 for room. \$15 for meals / mo. Still high.
but 100 r. would with cost \$600 r. (?) send a lot. Spoke German
Work winter work

Very friendly. Cost us \$44 r. All were good except Felgen's wife.
They lived in Sovietized in winter - good quarters supplied by local Sov.
at end all units represented to Stum + Red.
Chair taken to Kamen. did ~~no~~ ~~remember~~ he had encountered no
antiseptic
Felgen + wife
Felgen said that French was good.

Stempel Urzędu

Fotografia
Фото
Foto

KWESTIONARIUSZ WIZOWY

АНКЕТА ДЛЯ ПОЛУЧЕНИЯ ВИЗЫ — DEMANDE DE VISA
APPLICATION FOR VISA — ANTRAG FÜR EINREISEVISUM

1	Elinor, née Kesting Charney NAZWISKO Фамилия — Nom — Name — Name	2	IMIONA Имена — Prénoms — First names — Vornamen
3	31 August 1915; St. Paul, Minnesota, U.S.A. DATA I MIEJSCE URODZENIA Дата и место рождения — Date et lieu de naissance Date and place of birth — Datum und Geburtsort	4	Laura and Herman Kesting IMIONA RODZICÓW Имена родителей — Prénoms des parents — First names of parents — Vornamen der Eltern
5	Citizen of United States of America OBYWATELSTWO Гражданство — Nationalité — Citizenship — Staatsangehörigkeit	6	Citizen of United States of America NARODOWOŚĆ Национальность — Nationalité — Nationality — Nationalität
7	Research ZAWÓD I STANOWISKO Профессия и должность — Profession et situation Profession and position held — Beruf und Dienststellung	8	DOKŁADNY ADRES ZAMIESZKANIA Точный адрес — Résidence — Residence — Genaue Wohnadresse
9	NUMER I DATA WAŻNOŚCI PASZPORTU Номер и срок действительности паспорта — Numéro et date de validité du passeport — Number and duration of validity of passport — Nummer und Gültigkeit des Passes	10	No CZY BYŁ(A) JUŻ W POLSCE — KIEDY? Были Вы уже в Польше — когда? — Avez-vous déjà été en Pologne — quand? — Has the applicant ever been to Poland — when? — Waren Sie schon in Polen — wann?
11	Individual tourist DO KOGO I W JAKIM CELU SIĘ UDAJE (szczegółowo) К кому и с какой целью следует (подробно) — Chez qui vous rendez vous et dans quel but (motiver largement) Who is the applicant going to and for what purpose (state in detail) — Zu wem und zu welchem Zweck fahren Sie (ausführlich motivieren)		
12	To be arranged by ORBIS ADRESY W CZASIE POBYTU W POLSCE Ваши адреса во время пребывания в Польше — Adresses pendant votre séjour en Pologne — Addresses during stay in Poland — Adressen während des Aufenthaltes in Polen		

13

1 July 1961 for five days

KIEDY I NA JAK DŁUGO ZAMIERZA PRZYJECHAĆ
 Когда и на какой срок Вы хотите приехать в Польшу — A quelle
 date et pour combien de temps voulez vous vous rendre en Pologne
 — At what date and, for how long are you coming to Poland —
 Das gewünschte Ankunftsdatum in Polen und Aufenthaltsdauer

14

By air to Warsaw

MIEJSCE PRZEKROCZENIA GRANICY POLSKIEJ
 Место проезда польской границы — Lieu de passage de la
 frontière polonaise — Place of crossing the Polish border
 Durch welche polnische Grenzüberschreitungspunkte.

15

OSOBY TOWARZYSZĄCE (z o n a — d z i e c i)

Сопровождающие лица (жена — дети) — Personnes accompagnant le demandeur (femme-entants) — Accompanied
 by (wife—children) Begleitende Personen (Ehefrau und Kinder)

U W A G A : Osoby spośród wymienionych, które ukończyły 13 lat wypełniają ponadto osobne kwestionariusze wizowe
 Примечание: Лица, которым исполнилось 13 лет выполняют отдельно анкеты для получения визы.

R e m a r q u e : Celles des personnes sus-mentionnées qui sont âgées de plus de 13 ans, doivent remplir une demande de visa
 séparément

Please note: Above mentioned persons of over 13 years of age have to fill in separate applications for visa

A n m e r k u n g : Alle begleitende Personen über 13 Jahre haben zusätzlich ein besonderes Antragsformular für Einreisevisum
 auszufüllen

data — дата — date — Datum

podpis — подпись — signature — Unterschrift

TYLKO DLA ANNOTACJI URZĘDOWYCH

Только для служебных записок — Réservé aux annotations de l'office — Only for official remarks —
 Nur für amtliche Vermerke

UWAGI URZĘDU:

Załączniki:

Wizę Nr wydano na podstawie

w dniu z ważnością do dnia na jednorazowe krotne

przekroczenie granicy przez przejścia graniczne

Dnia

Podpis Kierownika Urzędu

Stempel Urzędu

Fotografia
Фото
Foto

KWESTIONARIUSZ WIZOWY

АНКЕТА ДЛЯ ПОЛУЧЕНИЯ ВИЗЫ — DEMANDE DE VISA
APPLICATION FOR VISA — ANTRAG FÜR EINREISEVISUM

1	<p>Jule Gregory Charney NAZWISKO Фамилия — Nom — Name — Name</p>	2	<p>IMIONA Имена — Prénoms — First names — Vornamen</p>
3	<p>1-1-17; San Francisco, California DATA I MIEJSCE URODZENIA Дата и место рождения — Date et lieu de naissance Date and place of birth — Datum und Geburtsort</p>	4	<p>Elij and Stella IMIONA RODZICÓW Имена родителей — Prénoms des parents — First names of parents — Vornamen der Eltern</p>
5	<p>Citizen of United States of America OBYWATELSTWO Гражданство — Nationalité — Citizenship — Staatsangehörigkeit</p>	6	<p>Citizen of United States of America NARODOWOSC Национальность — Nationalité — Nationality — Nationalität</p>
7	<p>Research and teaching in meteorology and oceanography Professor of Meteorology ZAWÓD I STANÓWISKO Профессия и должность — Profession et situation Profession and position held — Beruf und Dienststellung</p>	8	<p>288 Prince Street West Newton, Massachusetts DOKŁADNY ADRES ZAMIESZKANIA Точный адрес — Résidence — Residence — Genaue Wohnadresse</p>
9	<p>616974, valid until 6 April 1963 NUMER I DATA WAZNOSC I PASZPORTU Номер и срок действительности паспорта — Numéro et date de validité du passeport — Number and duration of validity of passport — Nummer und Gültigkeit des Passes</p>	10	<p>no CZY BYŁ(A) JUŻ W POLSCE — KIEDY? Были Вы уже в Польше — когда? — Avez-vous déjà été en Pologne — quand? — Has the applicant ever been to Poland — when? — Waren Sie schon in Polen — wann?</p>
11	<p>Individual tourist</p> <p>DO KOGO I W JAKIM CELU SIĘ UDAJE (szczegółowo) К кому и с какой целью следует (подробно) — Chez qui vous rendez vous et dans quel but (motiver largement) Who is the applicant going to and for what purpose (state in detail) — Zu wem und zu welchem Zweck fahren Sie (ausführlich motivieren)</p>		
12	<p>to be arranged by ORBIS (Polish travel agency)</p> <p>ADRESY W CZASIE POBYTU W POLSCE Ваши адреса во время пребывания в Польше — Adresses pendant votre séjour en Pologne — Addresses during stay in Poland — Adressen während des Aufenthaltes in Polen</p>		

13

1 July 1961 for five days

KIEDY I NA JAK DŁUGO ZAMIERZA PRZYJECHAĆ
 Когда и на какой срок Вы хотите приехать в Польшу — A quelle
 date et pour combien de temps voulez vous vous rendre en Pologne
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14

By air to Warsaw

MIEJSCE PRZEKROCZENIA GRANICY POLSKIEJ
 Место проезда польской границы — Lieu de passage de la
 frontière polonaise — Place of crossing the Polish border
 Durch welche polnische Grenzüberschreitungspunkte.

15

OSOBY TOWARZYSZĄCE (żona — dzieci)

~~Accompanied by wife~~

travelling under separate passport

Сопровождающие лица (жена — дети) — Personnes accompagnant le demandeur (femme-entants) — Accompanied
 by (wife—children) Begleitende Personen (Ehefrau und Kinder)

U W A G A : Osoby spośród wymienionych, które ukończyły 13 lat wypełniają ponadto osobne kwestionariusze wizowe

Примечание: Лица, которым исполнилось 13 лет выполняют отдельно анкеты для получения визы.

Remarque: Celles des personnes sus-mentionnées qui sont âgées de plus de 13 ans, doivent remplir une demande de visa séparément

Please note: Above mentioned persons of over 13 years of age have to fill in separate applications for visa

Anmerkung: Alle begleitende Personen über 13 Jahre haben zusätzlich ein besonderes Antragsformular für Einreisevisum auszufüllen

May 3, 1961

data — дата — date — Datum

podpis — подпись — signature — Unterschrift

TYLKO DLA ADNOTACJI URZĘDOWYCH

Только для служебных записок — Réservé aux annotations de l'office — Only for official remarks —

Nur für amtliche Vermerke

UWAGI URZĘDU:

Załączniki

Wizę Nr wydano na podstawie

w dniu z ważnością do dnia na jednorazowe krotne

przekroczenie granicy przez przejścia graniczne

Data

Podpis Kierownika Urzędu

Место
для
фотокарточки

Place
For
Photograph

АНКЕТА QUESTIONNAIRE

для лиц, желающих получить визу для въезда в СССР
for persons desiring a visa for entry into the USSR

или транзитного проезда через СССР
or transit through the USSR

(Писать четко, обязательно чернилами или на машинке. На вопросы давать исчерпывающие ответы)
Please write clearly in ink or type and reply fully to all questions

Консульство, Консольдел Посольства СССР в

ВОПРОСЫ Questions	ОТВЕТЫ Answers
1. Фамилия, имя и отчество. (Лицо, имеющее несколько фамилий или псевдонимов, должно указать их полностью; замужняя или вдова должны указать девичью фамилию и фамилию мужа) 1. Surname, first name and patronymic (persons who has several surnames or pseudonyms must give them all; married woman or widow must give her maiden name and her husband's name)	Charney, Elinor, née Kesting husband: Charney, Jule Gregory
2. Число, месяц, год и место рождения 2. Day, month, year and place of birth	31 August, 1915 St. Paul, Minnesota, U.S.A.
3. Национальность 3. Nationality at birth	Citizen of the United States of America
4. Гражданство или подданство в настоящее время. Если ранее имели другое гражданство или подданство, то укажите, какое 4. Present and former citizenship	Citizen of the United States of America
5. Место работы в настоящее время, занимаемая должность и основная профессия 5. Where do you work at present, what type of work do you do and what is your profession	Place of work: Massachusetts Institute of Technology, Cambridge, Massachusetts Type of work: Research work in linguistics Profession: Logician

<p style="text-align: center;">ВОПРОСЫ Questions</p>	<p style="text-align: center;">ОТВЕТЫ Answers</p>
<p>6. Цель поездки, продолжительность предполагаемого пребывания в СССР и маршрут следования. ПРИМЕЧАНИЕ: от лиц, ходатайствующих о транзитной визе через СССР, требуется наличие въездной или транзитной визы страны, в которую или через которую следует данное лицо при выезде из СССР</p> <p>6. Object of your journey and expected duration of stay in the USSR</p>	<p>To accompany my husband</p> <p>Duration of stay: four weeks</p>
<p>7. Если с Вами следуют дети до 16 лет, то укажите фамилию, имя, отчество и возраст каждого из них</p> <p>7. Give surnames, names, patronymics and age of children under 16 years travelling with you</p>	<p>None</p>
<p>8. Были ли ранее в СССР (если были, то укажите, когда, где и чем занимались)</p> <p>8. Have you been to the USSR before? (If so-where and what was your business?)</p>	<p>No</p>
<p>9. Фамилии, имена, отчества и адреса близких родственников в СССР</p> <p>9. Names and addresses of relatives in the USSR (if any)</p>	<p>None</p>
<p>10. Адрес Вашего постоянного местожительства</p> <p>10. Your permanent address</p>	<p>288 Prince Street, West Newton, Massachusetts, U.S.A.</p>

Дата заполнения анкеты
Date of filing
April 4, 1961

(число, месяц, год)
(date, month, year)

Личная подпись заявителя
Signature of applicant

Место
для
фотокарточки

Place
For
Photograph

АНКЕТА QUESTIONNAIRE

для лиц, желающих получить визу для въезда в СССР
for persons desiring a visa for entry into the USSR

или транзитного проезда через СССР
or transit through the USSR

(Писать четко, обязательно чернилами или на машинке. На вопросы давать исчерпывающие ответы)
Please write clearly in ink or type and reply fully to all questions

Консульство, Консольдел Посольства СССР в

ВОПРОСЫ Questions	ОТВЕТЫ Answers
<p>1. Фамилия, имя и отчество. (Лицо, имеющее несколько фамилий или псевдонимов, должно указать их полностью; замужняя или вдова должны указать девичью фамилию и фамилию мужа)</p> <p>1. Surname, first name and patronymic (persons who has several surnames or pseudonyms must give them all; married woman or widow must give her maiden name and her husband's name)</p>	<p>Charney, Jule Gregory</p>
<p>2. Число, месяц, год и место рождения</p> <p>2. Day, month, year and place of birth</p>	<p>January 1, 1917; San Francisco, California</p>
<p>3. Национальность</p> <p>3. Nationality at birth</p>	<p>Citizen of United States of America</p>
<p>4. Гражданство или подданство в настоящее время. Если ранее имели другое гражданство или подданство, то укажите, какое</p> <p>4. Present and former citizenship</p>	<p>Citizen of United States of America</p>
<p>5. Место работы в настоящее время, занимаемая должность и основная профессия</p> <p>5. Where do you work at present, what type of work do you do and what is your profession</p>	<p>Place of work: Massachusetts Institute of Technology, Cambridge 39, Massachusetts</p> <p>Type of work: Research and teaching in meteorology and oceanography</p> <p>Profession: Professor of Meteorology</p>

<p>ВОПРОСЫ Questions</p>	<p>ОТВЕТЫ Answers</p>
<p>6. Цель поездки, продолжительность предполагаемого пребывания в СССР и маршрут следования. <u>ПРИМЕЧАНИЕ:</u> от лиц, ходатайствующих о транзитной визе через СССР, требуется наличие въездной или транзитной визы страны, в которую или через которую следует данное лицо при выезде из СССР</p> <p>6. Object of your journey and expected duration of stay in the USSR</p>	<p>Purpose of visit: To visit Soviet meteorological and oceanographical research institutions under the Bronk-Nesmeyanov agreement for the exchange of scientists between the National Academy of Sciences of the U.S.A. and the Academy of Sciences of the U.S.S.R.</p> <p>Length of visit: 4 weeks approximately</p>
<p>7. Если с Вами следуют дети до 16 лет, то укажите фамилию, имя, отчество и возраст каждого из них</p> <p>7. Give surnames, names, patronymics and age of children under 16 years travelling with you</p>	
<p>8. Были ли ранее в СССР (если были, то укажите, когда, где и чем занимались)</p> <p>8. Have you been to the USSR before? (If so-where and what was your business?)</p>	<p>no</p>
<p>9. Фамилии, имена, отчества и адреса близких родственников в СССР</p> <p>9. Names and addresses of relatives in the USSR (if any)</p>	
<p>10. Адрес Вашего постоянного местожительства</p> <p>10. Your permanent address</p>	<p>288 Prince Street, West Newton, Massachusetts</p>

Дата заполнения анкеты

Date of filing

April 10, 1961

(число, месяц, год)
(date, month, year)

Личная подпись заявителя
Signature of applicant

June 10, 1960

Passport Agency
148 Tremont Street
Boston, Massachusetts

Dear Sirs:

Enclosed are a check for \$5.00 and the passport of Elinor Kesting Charney. Will you please renew the passport and return it to Mrs. Charney at the following address:

288 Prince Street
West Newton, Massachusetts

Mrs. Charney will leave the United States in October, 1960 to visit Japan, and will return to this country sometime in November, 1960.

Thank you.

Sincerely,

Secretary to
Professor Jule Charney

tg

Enclosures (2)

cc: Mrs. Charney
Rm 20-102D

333039

~~issued at Boston (U.S. Dept. of State) on February 27, 1957
renewed June 17, 1960~~

~~good until February 27, 1961~~

new passport issued at Boston March 28, 1961

B160020

Passport Agency
148 Tremont Street
Boston, Mass.

CA 3-2946

Expiration and Renewal

Unless limited to a shorter period, this passport expires two years from the date of issue~~x~~ shown on page two. You can RENEW it for not more than two additional years for a fee of five dollars. No matter when renewed, the period of renewal MUST end four years after date of original issue. This passport MUST be presented with your renewal application. Renewal is shown by a stamp placed in the passport.

\$ 5.00 for renewal

10.00 new passport

*for additional info on
immunization call
U.S. Public Health
412-1560*

September 29, 1960

Dear Mrs. Charney,

Immunization requirements for Asiatic countries are:

smallpox
typhoid-paratyphoid
tetanus
typhus

You can get these at the MIT Medical Department any time each weekday between 9-12 and 1-5. You don't need an appointment. There is a nurse there who will take care of this for you.

You can get passport pictures at the MIT Photo Service, Graphic Arts Building, 211 Massachusetts Avenue. Call ext 765 to make an appointment. Appointments can be anytime between 9-12 and 1-5. The cost is \$1.50 a sitting plus 30 ¢ per print.

Your visa application is enclosed. After you fill it out, I will send it to Boston office of Japan Air Lines. They will take care of processing it for us. They say be sure to put "tourist" for purpose of present journey - which is obvious anyway.

This is all I can think of at present.

October 21, 1960

District Passenger Transportation Office
Air Traffic Section
Building 2007
Fort Mason, AFB
San Francisco, California

Dear Sirs:

Enclosed are one copy each of Transportation Certificates for Professor Jule G. Charney, Professor Norman A. Phillips, and Dr. Yoshimitsu Ogura. These certificates confirm the Air Movement Designator Numbers and flight reservations by MATS that Mrs. Fran Nyby gave me by telephone today for these three men to travel to Japan November 3, 1960.

If you need to get in touch with us by telephone, the number at MIT is UN 4-6900, extension 2451.

Thank you.

Sincerely,

Secretary to J.Charney

tg

Encs: (3)