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5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
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Telephone: 412-268-2434
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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

TEN COMMANDMENTS OF A SCIENTIST

1. Do not feel absolutely certain of anything.
2. Do not think it worth while to proceed to conceal evidence, for the evidence is sure to come to light.
3. Never try to discourage thinking for you are sure to succeed.
4. When you meet with opposition, endeavor to overcome it by argument and not by authority, for a victory dependent upon authority is unreal and illusory.
5. Have no respect for the authority of others, for there are always contrary authorities to be found.
6. Do not use power to suppress opinions you think pernicious, for if you do the opinions will suppress you.
7. Do not fear to be eccentric in opinion, for every opinion now accepted was once eccentric.
8. Find more pleasure in intelligent dissent than in passive agreement, for, if you value intelligence as you should, the former implies a deeper agreement than the latter.
9. Be scrupulously truthful, even if the truth is inconvenient, for it is more inconvenient when you try to conceal it.
10. Do not feel envious of the happiness of those who live in a fool's paradise, for only a fool will think that it is happiness.

Exhibit 2

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

DEPARTMENT OF BIOLOGY

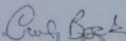
May 6, 1970

Dr. Askeff Löve, Chairman
Department of Biology
University of Colorado
Campus

Dear Dr. Löve:

At its meeting this noon the faculty of the Biology Department voted to express its gratitude for your efforts as our chairman over the past four years. We realise that the job is often a thankless one, and we want you to know that we feel the department has made great progress during your tenure. We look forward to your being able to return more fully now to teaching and research, which will continue to bring honor to our department.

Very sincerely,



Carl E. Bock
Acting Associate Chairman

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Exhibit 7

Boulder, May 5, 1970.

Professor Robert Smith, Chairman-elect,
Department of Biology,
University of Colorado, Boulder.

Dear Robert:

My six years experience in the Biology Department under a narrowminded dean of arts and sciences and a couple of years under an unscrupulous dean of the graduate school has convinced me that not only do these men, who were selected to their posts by aid of connections rather than on basis of academic competence, want to eliminate all real scholarship from the non-chemical part of the Biology Department, but also that these too powerful administrators keep their eyes open to the fact that I am a non-conservative immigrant from a small but highly cultured nation at the same time as they refuse to accept that my education, experiments and achievements are far above those of the average professors at this university and therefore far above that of the junior college teachers they prefer for biology. I do not feel too badly about being kicked by small people, as for instance when the graduate dean recently helped his handicapped committee refuse me, and so other biologist here, a faculty fellowship after six years of good work, with the explanation that my work was only on "damned chromosomes", as if he understood their significance. I am more disturbed by that a good friend at the NSF has indicated to me that this dean has prevented a renewal of our grants by telling them per telephone that there are no and will not be any facilities in the department for work of the kind we do - but this may not be true. Sometimes I have wondered if this administrator perhaps may have been behind the visit the FBI made a year or so ago to Bonde, Helwig and Shushan to snoop about my opinions and beliefs - the same as the CIA had done for years but through a direct contact through their exemplary and pleasant agent here. Be that all as it may, but I have tried and will continue to try to do my very best in whatever I do in research or other work, at the same time as I will continue to make efforts to avoid all contacts with this apparently small and insecure man, following the wise advice by good old Rudyard Kipling regarding the honesty of the Saxons that ends with "my son, leave the Saxon alone", or perhaps the following fits still better as an advice in this case: "Do'n't dance or ride with general Bangs - a most immoral man." So I will do my best to keep away from Lawson Crowe and hope that his superiors will understand his not so straight moral and disposition before he gets an opportunity to sink the university to his own level.

I am more bothered about the attitude of Briggs, who is not a great man but I believe an honest man, although not free from bigotry as so many here. I cannot understand his inability to realize that even non-chemists may be too outstanding in their research for junior college teaching, and his unwillingness to see that even an immigrant who speaks with an accent (which he once has tried to imitate to my face in a very compromising situation) may have feelings and even be internationally recognized in their fields and thus ought to be treated economically no worse than those who do similar work and are born here. That my strength lies in my profound education at one of the finest and oldest universities in Europe, and in creative research and writing, ought to be clearly documented by my thirty years of publishing several hundred research

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papers that have strongly influenced the international development in my field, some much appreciated books, and numerous research reviews, all of which have caused many international honors to come my way. And it ought to be evident even to him that my strength in the fields of evolutionary botany, in which I am a recognized international leader since decades, as you so well have told me was also your impression, has been steadily growing, as can be seen by the fact that in 1964, the year I came to Boulder, I published 15 research papers (alone and with my very learned but much discriminated against wife) and five research reviews, whereas since 1965 I have published 60 research papers and books and 54 research reviews, altogether more than 1900 pages, despite a normal teaching load, heavy administration, and virtually no research facilities.

Since it has become very apparent recently that the two deans do not appreciate research in the Biology Department, and have even decided to complete their pertinent discrimination against me by professional assassination, as soon as they can invent some ways for this, with or without outside help, I am forced to draw the conclusion that if we cannot find a more congenial atmosphere elsewhere, I must ask for a transfer of my position and salary to another part of the University where good and productive research is better appreciated than under these administrators. I could do this straight, by contacting the President himself personally and in writing, but since that might be construed as an indication of disagreement between us, which is non-existing as we both know, I would rather not go above your head with such a wish. Instead I hereby submit to you the humble request that you make all possible efforts on my behalf to get my position transferred from the beginning of the academic year 1970-71 to the University of Utah, where I could hold the office of a professor and curator of evolutionary genetics, evolutionary botany, or simply experimental botany and biogeography, or straight cytotaxonomy, a subject in which I know I am the recognized world leader. Or, if this should be more feasible, I could be transferred to the Institute of Arctic and Alpine Research, though my wide interest in evolutionary biology certainly would fit better into the work at the Museum at the side of Professors Meslin, Robinson and Weber. Naturally, I would teach at the Biology Department in the capacity of 'joint appointments' as do Professors Meslin, Rodeck and Weber, if so desired, and accept the responsibility for graduate students whenever appropriate. At the same time, since at least the Museum is short of space, I would like to request that you arrange that I be allowed to keep my present office and laboratory space in the Armory until other suitable arrangements can be made.

I hope that you realize that this letter is not to be construed as a declaration of any criticism or doubts from my side of your prospective administration. But I hope that such a transfer will help to alleviate some of the illwill of the two administrators mentioned towards the Biology Department and allow your own contacts with them to become much more cordial than they allowed during my chairmanship.

Naturally, this letter is personal and confidential, though I hope you can and will use its contents to get the action asked for, the sooner the better. You have my permission to show it, again confidentially, to the directors of the Museum and Instaar, but not to copy it for them or others nor to broadcast its contents even among our colleagues in the Department.

With the very best wishes and thanks for your positive action

Yours sincerely,

Askill Löve

Arrived March 16, 1972

Exhibit 4



SMITHSONIAN INSTITUTION
Washington, D.C. 20560
U.S.A.

February 10, 1972.

Mr. Lawson Crowe
Provost and Vice President for
Research
The University of Colorado
Boulder, Colorado 80302

Dear Mr. Crowe:

I refer to CU Proposal No. 71.7.383, Dr. Askell Löve's proposal to continue his "Cooperative Studies on the Cytotaxonomy of the Yugoslavian Flora." I regret that, after careful review of the results of Dr. Löve's first year of work in Yugoslavia, as outlined in his renewal proposal, the Smithsonian has reached the conclusion that the project cannot be supported as a continuing project. Our review included consultation with scientists particularly qualified to comment on the subject matter of the proposal; after that the proposal was reviewed by the regular Smithsonian Foreign Currency Program Advisory Council in Biology which has a rotating membership drawn from established American biologists. The conclusion of the Advisory Council was that the results of the first year's work do not warrant continued support for the project. However, since both the American and Yugoslav teams engaged in the project were proceeding on the expectation of continued support, the Advisory Council voted to award the sum of \$40,000 equivalent in "excess" Yugoslav Dinars for a terminal season of work in order to allow the data obtained in the first year to be consolidated and the project to be closed out in the most orderly possible manner.

The Smithsonian's decision not to support this project on a continuing basis, even though support for the first year was awarded on the basis of Dr. Löve's original application, is based on our Foreign Currency Program policy as outlined in our regular Program Announcement (latest edition dated July 1, 1971): "SFCP grants normally provide support for only one year's research even though the original proposal anticipates several years' work. To secure funds for each succeeding year, a renewal proposal is required."

KDWhitehead:pbb

If the University decides to accept the award of \$40,000 equivalent in Yugoslav Dinars for an orderly close-out of the project during a terminal season of work, Dr. Löve should be requested to forward a detailed budget for work at this reduced level to the Smithsonian for approval and incorporation into a subsequent grant contract. No payments designated "salary" for any of the American participants should be included in this budget.

Sincerely yours,

Kennedy B. Schmertz
Director
Foreign Currency Program
Office of International Activities

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EMBASSY OF THE SOCIALIST FEDERAL REPUBLIC OF YUGOSLAVIA
2410 CALIFORNIA STREET, N. W. WASHINGTON, D. C. 20008 462-6566

Ekz. št. 5

17. mart 1972.

Dr. Franc Sušnik
Direktor
Institut za biologiju
Aškerčeva 12

Ljubljana

Poštovani dr. Sušnik,

Dr. Schmerz, koji vodi spoljne poslove u Smithsonianu, zamolio me je da Vam prenesem jednu informaciju delikatne prirode.

Radi se o projektu "Cytotaxonomy of Yugoslav Flora". Jednogodišnji rad dr. Asker Lövea na tom projektu dobio je lošu, neprolaznu ocenu. Zbog toga će Smithsonian ovu drugu godinu da finansira u visini prve (40. - 50.000 dolara). To je, takodje, poslednja godina za dr. Lövea, jer se neće saglasiti da on i dalje nastavi da radi na tome. Pošto dr. Lövea smatraju upornim, očekuju da njegovo uklanjanje neće proći bez trenja.

Na Vaš rad nemaju primedbi. Smatraju da je problema - tika interesantna i željeli bi da je nastave sa nekim drugim, boljim američkim naučnikom. Vi možete razmišljati ko bi mogao drugi da dodje u obzir, pa kad se stvar raščisti sa Lovéom, nastaviti sa drugim.

Sa drugarskim poštovanjem,

M. Mladjenović
dr. Milorad Mladjenović
Savetnik za nauku

Dr. Milorad Hladjevović
Sr. Scientific Attacks

Transmission by F. Schmidt

Dear Dr. Sušnik

Dr. Schmertz, Director of Office of International Activities in Smithsonian asked me to transmit to you an information of a very delicate nature.

The matter in question is the project "Cytotaxonomy of Yugoslave Flora". One year's work of Dr. Löve on this project has been evaluated with a bad, insufficient recommendation. Therefore the Smithsonian has decided to finance this second year in the same amount as he did in the first one /40.500.000 dollars/. This would be also the last year for Dr. Löve, because they will not agree with Dr. Löve continuing this work. But Dr. Löve is known as a very persistent man, so they expect that his removal will not pass without any difficulty.

They have no remarks on your work. Considering that the problems are interesting, they would like to continue this work with another, a better american scientist. You can think over about another american scientist, who would be capable for this work, and then, after the problem with Dr. Löve has been solved, continue the work with him.

Sr.

Translation of English version

Dear Dr. Mladjenović

I thank you for the information in connection with the visit of Mr. H. B. Quine and Mr. T. A. Wastler. The information about the project "Cooperative Studies on the Cytotaxonomy of the Yugoslavian Flora" was especially important for me, because I am personally involved. A few days ago I got a letter from Dr. Löve /with a copy of the information from the Smithsonian Institution to the University of Boulder, where Dr. Löve is working as professor/, in which he is interpreting the new situation. I regret not to know the reasons, why the Smithsonian Institution has decided in such a way. I personally can guess then, so that this decision has not surprised me too much. The most difficulties are probably connected with his political views and the fact, that he is a foreigner in U.S.A. /a citizen of Iceland/.

If I sum up the first year of a work on this project, I can see the first - very interesting and promising results. The chromosome number is in fact the fundamental genetic information and therefore important so far the fundamental knowledge of the rich flora in our country /Yugoslavia is for its geographical, geological, and ecological character the most interesting country in Europe/, as because of its interest for the applicative fields of work /pharmacology, agriculture, forestry, etc./. The first results are already published in scientific periodicals /6 papers/. Any interruption of this scientific work would entail a material, but an even greater moral damage. In the present situation we would not be able to realize the project with our financial resources only. But probably somebody could say some critics on our account too. Some time ago I wrote about it to Dr. Schmertz. I mentioned him that I will inform about the whole matter also you. As I have already said, our opinion is that the work on this project has to be continued. If we remain in the standards of scientific relations" it is impossible to change one of the principal investigator, without explanation what is the reason. Do they mean ~~mean~~ ^{express} unconfidence to our work too?

.....

An Interim Report and Proposal to the
Smithsonian Institution
for

RESEARCH SUPPORT IN YUGOSLAVIA UNDER THE FOREIGN CURRENCY PROGRAM

Name and Address of Institution: The Regents of the
University of Colorado
Boulder, Colorado 80302

Title of Research: Cooperative Studies on the Cytotaxonomy of the
Yugoslavian Flora

American Principal Investigators: Åskell Löve, Professor
Doris Löve, Research Associate
Department of Environmental, Population
and Organismic Biology
University of Colorado
Boulder, Colorado 80302, U.S.A.


Yugoslavian Principal Investigators: Franc Sušnik, Professor
Ernest Mayer, Professor
Institute of Biology
University of Ljubljana
Ljubljana, Yugoslavia

Starting Date: June 1, 1972

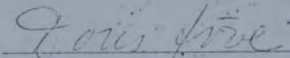
Estimated Duration of Project: Five years

Amount Requested for the Second Year: \$108,370

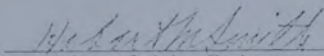
Amount for Three Following Years: Approximately \$300,000



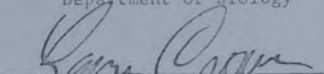
Åskell Löve
Principal Investigator



Doris Löve
Principal Investigator



Hobart Smith, Chairman
Department of Biology



Lawson Crowe, Provost and
Vice President for Research

If a Smithsonian Foreign Currency Program grant is awarded for the conduct of the research described in the attached proposal, it is hereby requested that an advance payment, as set forth in the project budget, also be authorized to begin carrying out the work, since this institution is a non-profit institution without working capital to initiate research. Moreover, to employ dollar funds to begin this work would be contrary to the President's directives to avoid expenditures abroad which might contribute to the U.S. balance of payments deficit.

A. Report of Activities for the First Season: Summer 1971

As the first step in the study of the cytotaxonomy of the remarkable flora of Yugoslavia, it was proposed that extensive studies be made towards an evolutionary-ecological synthesis of the history of the alpine vegetation of this region, beginning with cytotaxonomical studies of as many as possible of the species of higher plants in the Julian Alps. Our Yugoslavian colleagues were, however, of the opinion that such a review of the entire flora of Slovenia as a whole would be more appropriate. The flora of this part of Europe, and especially the alpine regions, is known to be rich in endemic species, whereas it seems to be typical of various regions of Slovenia that related taxa integrate or mix in zones where the nemoral flora of western Europe meets the Mediterranean vegetation. The work was planned as a cooperative effort between a team of cytotaxonomists from the University of Colorado and a group of cytologists, taxonomists, ecologists, and technicians from the University of Ljubljana, centering at the Institute of Biology and the Botanical Garden.

Due to various circumstances, the American team could not be in the field for more than two months this first summer (1971), but during that time extensive work on orientation, collecting, and microscoping, as well as library and writing work, was carried on every day, including weekends. Although the work could be grouped in various other ways, we find it easiest to report about it under the following headings:

1. A Review of the Flora of Slovenia and the Alps

In order to acquaint the five members of the American team with the details of and problems in the Slovenian flora, the Yugoslavian team had planned travel to areas of various kinds during the first four weeks of our stay, combined and interspersed with extensive collection of living material for further study in the Botanical Garden. These travels took the group all over Slovenia, though they concentrated mainly on the alpine regions. Material brought to the Botanical Garden in Ljubljana and the Juliana Botanical Garden in the Julian Alps included all the endemic species of the eastern Alps in the widest sense. Also, a good proportion of the non-endemic alpine flora of the Julian Alps, Kamnian Alps, the Karavanken, and Trnovski Gozd was brought under cultivation for further study, in addition to selected material from other regions for comparison. The American team became thoroughly acquainted with the about eighty endemic species of this area,

and also with the numerous endemic subspecies, varieties, forms, and demes, and with the flora as a whole, which the two American Principal Investigators knew previously as belonging to the western European nemoral flora.

During our travels, numerous problems to be studied through this cooperative effort were discussed in detail with the Yugoslavian botanists. Based on these discussions, the four senior scientists, Åskell Löve, Doris Löve, Ernest Mayer, and Franc Sušnik, compiled a report which reviews the problems from various points of view and describes the evolutionary background for the planned work. It is hoped that this paper will be printed this winter in a Yugoslavian journal.

For the latter part of the summer, the team was joined by the Norwegian cytotaxonomist and specialist on alpine flora, Dr. Gunvor Knaben of Oslo, who has studied similar problems in Scandinavia and Alaska for many years. She spent considerable time in the Julian Alps together with her Norwegian assistant and one of the skilled Slovenian students, concentrating mainly on studies of critical groups of the large genus *Saxifraga*. All the cost, for her stay and travels and those of her assistant were paid by a special grant from the Norwegian Research Council, but she shared our laboratory without compensation.

In connection with the survey of the flora, the American Principal Investigators and one of their assistants compiled a critical checklist of the entire Slovenian flora, which comprises about 2,900 species, and prepared it for computerization. This list also includes information on previously determined chromosome numbers and the distribution of each taxon within Slovenia. The list is being circulated within the entire group of researchers in the cooperative team as a computer printout, will be made available to others as soon as it has been completed, and will serve the group as a basis for selection of critical groups for study during the years to come. Our Yugoslav colleagues feel that its publication would be useful for several other groups of scientists inside and outside Yugoslavia, so we plan to print it in some Slovenian publication series during the winter or next summer. Although about 60-70 percent of the species seem to have been cytologically studied from elsewhere in Europe, less than 5 percent of the taxa have been determined from Slovenia itself, and most of the critical groups remain cytologically unknown.

2. Cytotaxonomical Work

As mentioned above, considerable collections were brought to the Botanical Gardens during the summer, both from the trips of the entire group and from

numerous individual trips when both teams split up into smaller expeditions. All this material was potted in the Gardens and much of it has already been fixed for cytological study, at the same time that duplicate vouchers were carefully produced for more detailed identification later. Considerable numbers of cytological preparations had already been studied before the American team returned home at the end of August, and the rest will be worked out during the winter months. The numbers for 115 species, representing eighty genera and 38 families, have already been submitted for printing in November in the journal Taxon. These include some of the more remarkable endemics, whereas most of the endemics of the Julian Alps, the Karavanken, the Kamnian Alps, and Trnovski Gozd will be studied more closely during the winter, together with some selected taxa of special interest.

3. The Endemics

In addition to field observations of the endemics and studies of their chromosome numbers, we tried to make a complete taxonomical review of all the Slovenian endemics, and studied them morphologically and cytologically in great detail. A thorough study of their distribution including mapping, is being made by Ernest Mayer. These studies are being coordinated with similar studies in the central and western Alps by Professor Cl. Favarger and his students in Neuchatel in Switzerland, the foremost specialist on the cytotaxonomy of the Alpine flora, and with studies of endemics and alpine plants from Spain and Italy performed but not yet published by Åskell and Doris Löve and on alpine plants from the arctic regions of Atlantic Europe by the American Principal Investigators and Dr. Gunvor Knaben. Although all the Slovenian endemics were under study already this first season, special attention was given the following complexes and taxa, which may serve as examples.

a. Iris cengialti Ambr. and I. illyrica Tommas. These are taxa of the eastern Alps and of the coastal mountains of the northern Adriatic. Although morphologically and geographically distinct, these species have been known to cross and give rise to apparently fertile hybrids, and on the basis of morphology some botanists in the past have regarded them as races only of the much more widespread southeast European Iris pallida Lam. Our chromosome studies do not contradict this conclusion, since all these taxa are characterized by the same number ($2n = 24$) and at least very similar morphology of chromosomes. However, a more detailed study of

already available artificial hybrids will be performed before a final conclusion is reached, although the present evidence seems to be in favor of regarding them only as minor geographical races, or varieties, of a single species.

b. Aconitum angustifolium Bernh. This taxon of the eastern Alps has recently (by Tutin in the Flora Europaea) been regarded as a doubtful variation, which some others have even thought of as a possible hybrid between A. variegatum L. and A. compactum Rchb. Our studies showed it to be a hexaploid, which is possibly derived from the diploid and tetraploid species just mentioned. No further investigation is needed for its acceptance as a good endemic species, although more work has to be done before its mode of evolution can be ascertained.

c. Papaver julicum Mayer and Merxmüller. Our studies of the cytology of this taxon have confirmed that it is a diploid belonging to the diploid complex P. alpinum L., most closely related to its ssp. sendtneri (Kerner) Schinz and Keller. Our preliminary observations seem to indicate that its correct evolutionary status may be as a variety of this major race, but hybridization experiments may be required before that question can be definitely settled.

d. Pastinaca fleischmannii Hladnik. This taxon was discovered on the slopes of Castle Mountain in Ljubljana more than 150 years ago and brought into the Botanical Garden. There it survives thanks to help from the gardeners, but it is extinct on the mountain. We have found it to be cytologically identical with P. sativa, of which it is apparently a one-gene mutation, so it is most correctly regarded as a genetically deviating deme or local population of interest mainly as the lowest observable level of endemism.

e. Hladnikia pastinacifolia Rchb. This umbelliferous genus is one of the most distinct endemics in Europe, met with only near the eastern and western borders of the Trnovski Gozd, which is the southernmost part of the Slovenian Alps in the karst region. We studied it from various points of view with Professor Sušnik and are working on a comprehensive report of the cytotaxonomical, chemotaxonomical, morphological, ecological, and chorological characteristics of this monotypic genus. These studies seem to confirm earlier opinions that this is a relic paleoendemic of such a distinction that even our detailed methods are not able to reveal its relationship to any other genus of the family anywhere in the world.

f. Gentiana froelichii Jan. The American Principal Investigators have long been working on the reclassification of the collective genus Gentiana, a work in which they have cooperated with Swedish and Japanese specialists. Ernest Mayer of the Slovenian team has also been interested in the subdivision of this taxon into more natural genera, on morphological and chorological grounds. Through his help and that of our other Yugoslav colleagues we became well acquainted with several of the groups represented in Yugoslavia. Our attention was especially directed towards the beautiful high-alpine species which were thought to be related to taxa in the Himalayas and other southern mountains. Of these species we became especially interested in G. froelichii, which is known only from two small areas in the easternmost Alps and in the eastern Italian Alps. Although it remains somewhat like the small species of the Frigida group of southern Eurasiatic mountains, it differs from all its species in several respects, so specialists have been inclined to distinguish it in a section of its own. We were already acquainted with many of the other species, but the distinction of this taxon struck us at once, and when we could add the observation that it is a hexaploid with distinct chromosome morphology and the basic number which is rare in the Gentianeae, we came to the conclusion that it would be more correctly treated as a genus of its own, monotypic and endemic without closer relatives, perhaps the most distinct genus ever separated from Gentiana s. lat. We are still working on this problem, but expect to be able to publish the description of the new genus later this winter in a paper by A. Löve and E. Mayer.

We hope to collect considerably more material on these and all the other endemics for further investigation next summer, although it may require several years to find a satisfactory solution of the complex cytotaxonomical problems of this interesting group. It is our hope that these studies may carry us one step closer to an understanding of the evolutionary problems of endemism. It is evident already at this stage, however, that polyploidy is no more a factor in the evolution of such plants than it is in that of other species in the same flora, since we find its frequency to be the same within this group and in the entire flora of the eastern Alps, an observation also made by us within other regions which we have had an opportunity to investigate. However, we found some indications that special pollination mechanisms may play a role in the evolution of these alpine endemics, though some other factors are apparently also effective in their isolation and survival, and we are in no doubt that the solution

may be different for more recent endemics within the species and the old and very distinct paleoendemics of the type of, for example, Hladnikia and Gentiana froelichii.

4. Polyploidy

The ecological composition of the alpine flora of Slovenia is well known, and detailed phytosociological levies are available from various areas of climatical and ecological variability, especially in the Julian Alps and the caves and deep grooves or "dolinas" of the karst region. Combining such studies with investigations on the frequency of polyploids with the aid of computer techniques may be expected to result in the detection of stress areas which may be of some importance for the understanding of phenomena of selection that could have affected the evolution of endemics, at the same time as this may perhaps help the understanding of several other ecological phenomena. One of our researchers, William Reid, did considerable work in this field during the summer, together with Slovenian colleagues. He has already started to work out a computer program for this material, which he wants to complement next summer, and we expect that he will be able to present the results as his Ph.D. thesis during the winter of 1972-73.

The chromosome checklist mentioned above is composed in such a way that it will be easy to use it, with the aid of the computer, to compare the frequency of polyploids within the phytogeographic areas into which the Slovenian botanists have divided their country. This may be preliminarily completed during this winter, although it will hardly be ripe for publication until later, when still more material becomes available. Also, the checklist will be useful as a basis for other studies on the frequency of polyploids, including studies at different altitudes, in order to check some hypotheses and discrepancies between northern and southern regions previously studied from these points of view.

We started studies on some polyploid complexes, especially within the fern genera Ceterach and Pteridium, but also from other groups, like Acetosella, Dactylis, Dactylorhiza (of which our group discovered a new species for Slovenia), Leucanthemum, and several others, all of which are represented by at least two ploidy levels in this area. Some of these studies are already so close to completion that we have drafted papers describing the results, whereas others will be studied more closely during the following seasons, and still others are planned for use by Slovenian students for their thesis work.

5. Scopolia

It is the very legitimate wish of the Yugoslavian team that the results obtained be published in Yugoslavian journals as far as possible, and for this purpose \$1,000 were budgeted for the first year. The only Slovenian publication available for such a purpose is Bioloski Vestnik, which at irregular intervals publishes papers on various biological subjects but has a very small circulation in botanical fields and outside Yugoslavia. The same is true for other Yugoslavian local journals, which we nevertheless plan to use for printing some of our results. After considerable discussion, the conclusion was reached that a national botanical journal with international scope specializing in evolutionary botany, including taxonomy and phyto-geography, would be highly desirable. It was decided by University of Ljubljana authorities to start such a journal early in 1972, mainly with the aid of funds from the University and from other available Yugoslavian sources. The name chosen for this journal is Scopolia, in honor of the classical Slovenian botanist Scopoli, who in 1772 published the very important and still classic Flora Carniolica, the first manual of the plants of any part of present Yugoslavia. Editors from Ljubljana have already been selected and a list made of five foreign and five Yugoslavian members of an editorial board, and twenty-five foreign collaborators, to insure the quality of the journal from the beginning. This coming year, instead of supporting directly the printing of individual papers from our program with the certainly insufficient sum of \$1,000 budgeted, it is our opinion that it would be more appropriate to use this sum as direct support for the journal, properly acknowledged on the title page of each volume, and then print most of the papers there without direct individual support. The approval of the Smithsonian Institution Foreign Currency Program is hereby sought for this use of the funds set aside for publication costs.

6. Summary

The first summer of the cooperative study of the cytotaxonomy of the Yugoslavian flora was, by necessity, used mainly for orientation on the problems to be investigated, and then almost exclusively within Slovenia and primarily in the Slovenian mountains, which are the easternmost parts of the Alps. On the basis of this review, it was decided that although the first objective of this cooperative effort still must remain the study of the Yugoslavian flora as a whole, with the main concentration during the first five years on the well-known flora of Slovenia, this opportunity should also

be used for a concerted attack on the evolutionary problem of endemism, because nowhere else are there so many endemic taxa at all levels. In addition to this orientation, the following results were obtained during the first summer:

a. A critical checklist of the Slovenian flora, including detailed information on chromosome numbers and distribution of all the taxa, was compiled by Á. and D. Løve and L. Kaersvang. It will be completed and computerized during the fall and, hopefully, printed in the spring or summer.

b. Numerous samples of several hundred species were collected and transplanted to the Botanical Gardens for further cytological and taxonomical study. Among these were living and herbarium material of all the endemic species of the Julian Alps, Trnovski Gozd, Kamnian Alps, and the Karavanken. Some of these studies are already nearing completion, and papers reporting the results will probably be completed this winter.

c. In connection with the compilation of the chromosome checklist, detailed studies are being made on the frequency of polyploids within the flora of Slovenia as a whole and also within each of its distinct phytogeographical regions. In addition, one of the American researchers has selected as his thesis subject a computer study of environmental stress as observable from combined studies of phytosociological levies and polyploidy from the alpine regions to the lowlands and from karst caves and deep grooves.

d. As an indirect result of the cooperative effort, the University of Ljubljana has decided to start a new national botanical journal of international scope, named Scopolia after the first author of a Slovenian flora. This journal will be an appropriate place for publication of most of the papers that derive from this cooperative study.

e. The members of the cooperative group spent some time during the summer in preparing several papers, which will hopefully be completed during the winter. The following are the preliminary titles of these:

Chromosome atlas of Slovenian plant species (Á. and D. Løve, L. Kaersvang).

A new genus of Gentianaceae (Á. Løve and E. Mayer).

Chromosome numbers of 115 Yugoslavian plant species (M. Lovka, F. Sušnik, Á. and D. Løve, to be published in IOPB

Chromosome Number Reports 34, Taxon, November, 1971).

Cytotaxonomy of Yugoslavian plants. I. Introductory remarks

(Á. and D. Löve, E. Mayer, and F. Sušnik).

Polyploidy in the Slovenian flora (Á. and D. Löve).

Cytotaxonomy and chemotaxonomy of the paleoendemit Hladnikia
pastinacifolia (F. Sušnik and Á. Löve).

Cytotaxonomy and distribution of diploid and tetraploid Ceterach.

(M. Lovka, F. Sušnik, and Á. Löve).

Some chromosome numbers of eastern Alpine endemics (Á. and D. Löve,
M. Lovka, and F. Sušnik).

The significance of Pastinaca fleischmannii (F. Sušnik and Á. Löve).

Five to eight papers in the series: Cytotaxonomy of Yugoslavian plants

(Á. and D. Löve, M. Lovka, and F. Sušnik).

Naturally, support from the Smithsonian Institution will be appropriately
acknowledged in these papers, reprints of which will be sent to the Office
of International Activities as soon as available.

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B. Plan for the Second Year (1972-1973)

Based on our experience during the first summer, we would like to propose the following plan for the second summer and academic year:

1) Intensified and organized collection of Slovenian plants with an emphasis on the alpine species, the endemics, and species not previously counted from elsewhere. These collections ought to be made by smaller groups rather than by the entire cooperative team, concentrating on the flora of preselected areas, and they must be connected with observations of various environmental factors that may be of importance for the understanding of cytotaxonomical observations. Whenever a collection is being made, at least two identical voucher specimens must be collected for the herbaria, and several individuals will be transplanted to pots in the Botanical Garden in Ljubljana and to the Juliana Botanical Garden in the Julian Alps. As far as possible, chromosome studies will be performed on this material during the summer, but other specimens will be fixed for later observation.

2) Special attention should be given the alpine endemics, of which much more material must be collected from various parts of their limited ranges.

It is important that these populations be evaluated exactly from the point of view of their possible evolution, and for that purpose different approaches and methods will have to be employed. For the morphological and chorological part of this study, Professor E. Mayer's taxonomical skill and knowledge of the distribution of the Slovenian plants will be extremely important, and so will the ecological knowledge of the ecologists Micevski and Sopova. As far as possible, observations on pollination mechanisms will be made both in the field and in the garden, and crossing experiments performed whenever feasible.

3) Material should be collected from some critical species from the lowland and coastland which either seem to hybridize easily or have been observed to pass successively into each other within ecological and geographical transition zones in this region. Although cytological examinations of the original collections may sometimes give a clue to an explanation of such observations, it is expected that combined morphological and cytological observations employing some of Anderson's hybrid index methods may be better for this study, as are probably also cultivation experiments and hybridization studies in the garden.

4) We still believe that our work should be concentrated upon the Slovenian flora, with a special emphasis on its endemics. However, our

colleagues in Ljubljana are of the opinion, which we share, that it is important for the understanding of many of the Slovenian problems to have a thorough knowledge not only of the nemoral European flora, but also of the flora of other parts of Yugoslavia, thus remembering Kipling's words: "What should they know of England, who only England know?" Therefore, our colleagues want to make a botanical orientation excursion with us throughout Yugoslavia for two to three weeks of the early summer, during which extensive collections will be sent back to Ljubljana for later study. The excursion, which is being planned in detail by Professor E. Mayer, will also bring the group in direct contact with the botanists of other republics of Yugoslavia, many of whom have expressed their wish to be allowed to take an active part in the work and to learn our techniques during this second season, in the hope that such an approach can be shared also by them when our Slovenian review has advanced further.

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9/71

BUDGET FOR SECOND YEAR

I. International travel and transportation

1. Airfare, 9 round trips Denver-Ljubljana @ \$1,100	\$ 9,900
2. Airfare, one round trip for Danish consultant Copenhagen-Ljubljana @ \$300	300
3. Excess baggage or air-freight for books, equipment, etc.	<u>500</u>
Subtotal (I)	\$10,700

II. Expenditures in Yugoslavia

A. For American participants

1. Salaries and wages

a. Áskell Löve, Principal Investigator, 3 mos. @ \$2,060	6,180
b. Doris Löve, Research Associate 3 mos. @ \$1,800	5,400
c. Four Research Biologists, 3 mos. each, @ \$900 per month	10,800
d. Danish Consultant, one month @ \$2,200	2,200

2. Per diem, 570 man-days @ \$17	9,690
3. Mileage and car rental	3,000
4. Office rent for two American investigators, 3 months	1,000
5. Books, xeroxing, reprints, etc.	<u>800</u>

Subtotal (II-A) \$41,070

6. Medical and other insurance required by the University authorities: Sum and conditions unknown to Principal Investigators, but authorization requested for the American Embassy in Belgrad for negotiation.

B. For Yugoslavian participants

1. Salaries and wages

a. Franc Sušnik, Principal Investigator, 5 mos. @ \$600	3,000
b. Ernest Mayer, Principal Investigator, 3 months @ \$600	1,800
c. K. Micevski, ecologist-taxonomist, 1 month @ \$600	600

d.	M. Sopova, ecologist-taxonomist, 1 month @ \$600	600
e.	Two other botanists, 2 months each @ \$500	2,000
f.	Special assistant, 12 months, @ \$300	3,600
g.	Technical assistant, 12 months @ \$300	3,600
h.	Gardener, 12 mos. @ \$400	4,800
i.	Local labor	3,000
2.	Local travel (mileage and car-rental)	4,000
3.	Field maintenance and per diem	<u>4,000</u>
	Subtotal (II-B)	\$31,000
C. For cooperative efforts		
1.	Orientation excursion through Yugoslavia	1,000
2.	Non-expendable equipment	
a.	Stereomicroscope	800
b.	Zeiss camera microscope (Total cost, \$6,000; 50% to be borne by Univ. of Ljubljana.)	3,000
c.	Combi or Landrover (Total cost, \$5,000; 50% to be borne by Univ. of Ljubljana.)	2,500
d.	Experimental garden in Mediterranean area	1,500
e.	Experimental garden in Alpine area	1,000
f.	Greenhouse with growth-chamber (Total cost, \$5,000; 50% to be borne by Univ. of Ljubljana.)	2,500
g.	Photo equipment	1,000
h.	Gardening and herbarium equipment	1,000
3.	Expendable supplies	
a.	Laboratory supplies	1,300
b.	Photographic and other supplies	500
4.	Laboratory and office rent	4,000
5.	Publication costs	2,000
6.	Administrative costs	<u>3,500</u>
	Subtotal (II-C)	\$25,600

Second Year Total: \$108,370

BUDGET NOTES

The budget for the second year is based upon our experience during the summer of 1971, with slight increases caused by the devaluation of the dollar and expected inflation in Yugoslavia. If these two changes become substantially greater during the winter and spring, we trust that the officers of the Smithsonian Foreign Currency Program and the American Embassy in Belgrad will be able and willing to make an appropriate correction of the budget before the final dollar sum is fixed. The budget is calculated as carefully and exactly as possible, and is based on what we believe are minimum needs for maximum efficiency, so we hope it will not be drastically reduced without proper consultation, since we believe that such action curtailed our activities last summer and forced us and our assistants to supplement our per diem and travel costs unduly much out of our salaries.

Most of the increase as compared with last year's budget is caused by a one-third increase in time to be spent in the field, a necessary increase in participation by senior scientists and assistants, and by slight but normal salary increases. Also, by the beginning of the project the cost of international travel had already increased from the budgeted \$820 per person to \$930 per person, thus increasing the possibility of overseas travel for one American investigator this winter for consultation during the writing up of our results, or for one Yugoslav coming to America for the same purpose. This time our estimate of the possible increase in airfare is hopefully not too low, but the correct price will not be exactly known until next winter.

We would like especially to explain the following items:

I,2; II,A, 1 and 2: Danish consultant. These items include the cost of bringing Professor Tyge W. Böcher from Copenhagen to Yugoslavia as a consultant on various problems and on techniques which he has employed for many years in investigations that include numerous Mediterranean and arctic and alpine plants. Such consultation is highly recommended also by our Yugoslav colleagues, and it is likely to be of great help in organizing our cultivation experiments and in the discussion of the results obtained.

II,A, 2: Per diem. In our revised budget of January 28, 1971, which was based on discussions a few weeks earlier with the authorities in Ljubljana, we calculated per diem on the basis of \$17 per day as given in the information packet on Yugoslavia. Although we had mentioned that even this might be too low for Slovenia, this was reduced to \$12 per day, with the explanation (by telephone) that this had to be done, partly because of lack of funds

but mainly because Slovenia was said to be less expensive than Belgrad and Serbia. We had no way of protesting this, but during the summer we confirmed the fact that, since Slovenia is considerably more developed than other parts of the country, it is also more expensive for travelling and living. The reduction in per diem forced us and our assistants to pay out of our own pockets whenever we needed accommodations outside our base in Ljubljana, and it also made it mandatory that we make our own meals almost every day, thus spending valuable time that otherwise could have been used for research work. This year we are again calculating per diem at the rate of \$17 per day, and trust it will not be reduced, though we would expect it to be more realistic, after the devaluation of the dollar and the 15-20 percent annual inflation in Yugoslavia, if the per diem were raised to \$20-25, especially for cases that require both a base station and wide travels to other regions.

II,A,3: Mileage and car rental. After a visit to Ljubljana in January 1971, A. Löve was aware of that even the estimated sum of \$3,000 for mileage and car rental would be insufficient for efficient work by two Principal Investigators and three other researchers, since the car rental in Yugoslavia is fully as expensive as it is elsewhere. However, this already low estimate was cut to \$1,800, thus jeopardizing the collecting work which is the most basic part of our project, since this sum would have been sufficient only for the hiring of a small car for only part of the time. Fortunately, the University of Ljubljana lent our team two cars from its limited carpool, at a considerable sacrifice, in order to make our collecting trips possible, but we were expressly told when we left that this could not be done another year.

Our plans for a slightly larger group next summer make it necessary to increase the sum available for mileage and car rental. If our estimate of \$5,000 for this purpose proves to be too low, we will be able to switch parts of our efforts to other parts of the program, and, if it is too high, the remaining sum will, naturally, revert to Embassy funds. The lower sum for the Yugoslav participants is possible and reasonable because they are able to use their own cars for part of the time, without paying exorbitant sums for car rental, sums that include daily mileage requirements that are almost sufficient to carry one throughout Yugoslavia.

II,A,4: Office rent for two American Principal Investigators. The laboratory space rented from the University of Ljubljana for this project is sufficient for the laboratory work and as a place for the assistants we

had last summer, but it is not sufficient for the work of the Principal Investigators. We know of available and appropriate office space not far from the Botanical Garden that could be rented last summer for 4,500 ND per month, so we expect it to be available for three months next summer for the equivalent of \$1,000. If rented for this purpose, it will greatly facilitate the investigations, calculations, and writing by the two Principal Investigators, who otherwise will have to be crowded into space not appropriate for this kind of work.

II,A,6: Insurance coverage. When we arrived in Ljubljana last June, the University authorities told us that it would be desirable that all the American participants be insured under the national medical plan, in order to prevent hardship to the University in case of sickness or injury. Professor Susnik contacted the American Embassy personally for information about this, and was told that the American Principal Investigators ought to write to Mr. Schmertz to ask for such an authorization for the Embassy. This was done, but the letter was probably lost in the mail, since no answer ever arrived; the same happened to another letter written later about another need and mentioning the former letter. We could not get information about the sum involved, but we understand the concern of the University, because one accidental death and one case of serious illness hit other foreign colleagues in this area last summer. Therefore, we urge that this matter be taken up specially with the Embassy and solved to the satisfaction of the University before the beginning of the next season.

II,B,1: Salaries and wages of Yugoslav participants. Adjustment of the salaries of the two Yugoslav Principal Investigators is self-explanatory.

After the success of the restricted beginning, the Yugoslavs want to increase their participation to a degree more comparable to what was originally planned in the proposal of 1969. Therefore, we ask that two senior scientists, the ecologist-taxonomists K. Micevski and M. Sopova, be added to the team for one month. Their qualifications are beyond dispute, although we have not been able to get copies of their vitae so far.

The Slovenian Principal Investigators also find it highly commendable that we include two other botanists from Slovenia to participate actively in the work for two months. Since the selection of the most appropriate persons apparently takes longer than expected and has to be left to local botanists and the Yugoslav Principal Investigators, we propose that the inclusion of this item in the budget be accepted, in the belief that only well-qualified botanists will be proposed and agreed upon by the team.

One special assistant on a whole-year salary has been added to the Yugoslav group. This is our most qualified assistant, whom we want to employ as a full-time microscopist-cytotaxonomist. In addition to local labor, which we found to be insufficient in itself for taking care of the plants, we ask for a full-time gardener (a position included in the original proposal), in the hope that he will be able to keep the death of the transplanted plants at a minimum and their growth and flowering at a maximum.

II,C,1: Orientation excursion. A new item is added for an orientation excursion through Yugoslavia for the principal participants, during which other centers of botanical activities will be visited and studies and collections made of critical species from other regions of interest. This trip is being organized and planned by Ernest Mayer, who is an outstanding specialist on the taxonomy and distribution of the flora of the entire country.

II,C,2: Non-expendable equipment. Last year a stereomicroscope, valued at \$600, was left out of the budget. This influenced negatively some of our identification work this last summer, so the item is again included in the present budget, but at a higher price for inevitable reasons.

The Zeiss camera microscope will be needed to meet the requirements of so large a research group.

The Combi or Landrover was requested in the original proposal by the Yugoslavian team. We are requesting this auto again because of our need for a vehicle to be used exclusively by our research group.

Since Ljubljana is a warm city during the summer months, it is difficult to keep alive and growing some of the delicate alpine plants that we could not study at the Juliana Botanical Garden in the Julian Alps. Therefore, we feel it is necessary to add a greenhouse with a growth-chamber to the facilities at the Botanical Garden in Ljubljana. We have seen such chambers that were built in Yugoslavia and feel confident that the sum of \$5,000 will be sufficient for appropriate growth-chambers for our needs.

The University of Ljubljana will contribute one-half of the total costs of the above three items. Therefore, only the amounts shown are requested here.

The experimental gardens are needed to complement the experimental gardens in Ljubljana, where the climate is not always suitable for the comparative experiments planned.

II,C,4: Laboratory and office rent. This item must be increased because more space is needed for the junior researchers during the summer and coming winter because of their increased number. Other members of the team also use the laboratories, but the Yugoslav senior members use their own offices and the herbarium for much of their laboratory work on the project.

II,C,5: Publication costs. This amount is double that requested last year, because we expect that considerably more results will need to be printed the second year, if all goes as well as it has hitherto. This cost will likely be used as direct support for the journal Scopelia in its second year, since most of our papers will be printed in its pages.

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EVOLUTION

Harlan Lewis, Editor
 University of California
 Department of Biology
 405 Hilgard Avenue
 Los Angeles, California 90024

October 3, 1972

Dr. Åskell Löve
 Department of Biology
 University of Colorado
 Boulder, Colorado 80302

REFERENCE: "Chromosome numbers of tree species of a lowland tropical community and their evolutionary significance"

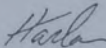
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Dear Askell:

Thank you for agreeing to review the enclosed manuscript. I would appreciate receiving your evaluation and recommendations concerning the manuscript within three weeks. I am enclosing a critic's checklist and stamped envelope for your convenience.

Thank you for suggesting another reviewer.

Yours truly,



Harlan Lewis
 Editor

P.S. I am unable to believe the material that has just arrived. You are undoubtedly the best person in the U.S. to conduct the project! I really don't understand what is behind the action to terminate. I can't look into the matter at the moment but I will try to find out what has been going on cordially best.

EVOLUTION

Harlan Lewis, Editor
University of California
Department of Biology
405 Hilgard Avenue
Los Angeles, California 90024

October 23, 1972

Dr. Åskell Löve
Department of Environmental, Population
and Organismic Biology
University of Colorado 80302

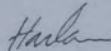
Dear Åskell:

Thank you very much for your review of the manuscript on chromosome numbers of tropical trees. I could have rejected it out of hand but since the author states that it had been "critically reviewed" by several prominent botanists, I thought he should have additional opinions. Thank you for your help.

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still find it unbelievable that you Yugoslavian cytogenetics project was terminated because they wanted "a better American Scientist" when they could not possibly find anyone with better qualifications for this project. Obviously someone has sabotaged the project for personal (certainly not rational) reasons. I was trying to think of what constructive action could be taken when a copy of Bill Turner's letter arrived. I agree with Bill that the best course of action is for Bill to make inquiries while he is in Washington because unless or until one finds out what the real problem is one does not know what steps, if any, are likely to bring positive results.

Cordially yours,



Harlan Lewis
Editor