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TRANSLATIONS ON EASTERN EUROPE  
SCIENTIFIC AFFAIRS  
No. 555

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INTERNATIONAL AFFAIRS

PREPARATIONS FOR SEA RESEARCH EXPERIMENT

Sofia TEKHNICHESKO DELO in Bulgarian 18 Jun 77 p 5

[Article by B. Konstantinov]

[Text] Workers of the Scientific Research Institute for Sea Research and Oceanology under the Bulgarian Academy of Sciences in Varna are busy preparing, under the management of Eng Zdravko Belberov, for the upcoming international experiment "Kamchiya 77." It will take place this summer with the participation of workers from the USSR, the GDR, Poland and Bulgaria. Research will be conducted and data gathered on the physico-dynamic processes in the atmosphere, the hydrosphere and the lithosphere. The results obtained from the studies will help to improve the use of sea resources as well as to preserve the sea environment in the coastal areas.

The Soviet scientific research ship "Akademik Orbeli," will participate in conducting the experiment. An exchange of experience will be carried out among aquanauts of the above-mentioned participating countries, using a diving base in the area of Maslen nos, Varna for this purpose.

CSO: 2202

KURCHATOV OCEANOGRAPHIC EXPEDITION RELATED

Sofia TRUD in Bulgarian 30 Jun 77 p 2

[Article by Tanya Kondakova: "120 Days in the Indian Ocean"]

[Text] This was the 22d trip of the huge floating scientific laboratory named after a noted Soviet scientist. It took place during its 10th anniversary year. As one of the biggest oceanographic vessels in the world, the ship Akad. Kurchatov has frequently earned high ratings for its qualities by American, British, Australian, French, and other scientific workers who have participated in its expeditions.

Several years ago the Akad. Kurchatov welcomed aboard another Bulgarian scientist, a geophysicist. In its last trip, for the first time, our geological science was represented on the ship by one of its members, Senior Scientific Associate Khrischo Khrishev, from the Geological Institute of the Bulgarian Academy of Sciences. Whereas the scientific objectives of hydrophysical and hydrochemical studies of the world's oceans (included in the program of this expedition as well) are easier to understand, on the surface the interest displayed by geologists may seem somewhat strange. What were the considerations for this interest?

"Above all," explained Khr. Khrishev, "it is impossible to develop an overall concept of the geological structure and development of the earth on a planetary scale without knowledge of the bottom of the ocean. Thanks to the more intensive studies conducted, particularly in the past 20 years, the achieved results have been so remarkable as to create a real revolution in geology. A new theory developed known as "plate tectonics" (global tectonics) according to which the earth's crust consists of solid massive plates. Many millions of years ago they formed a macrocontinent. Their movement resulted in deep wounds in the earth's crust, marking the beginning of the formation of oceans in whose main areas a system of ridges, real underwater mountains with levels greater than those of the Himalayan Mountains, have been established. It is precisely such reef zones that determine the places where the separation occurred. This theory helped to identify and interpret a number of geological phenomena which occurred in antiquity."

Would such phenomena include the sinking of the hypothetical Atlantis? Yet, our old planet still today apparently has no intention whatever of becoming peaceful. Let us ignore the constant earthquakes and volcanic eruptions on the "big dry land." Probably three-quarters of the earth's surface are not peaceful. Are these reef zones themselves symptoms of shifting? What did observations conducted in the Indian Ocean indicate?

"Indeed, we find there a large number of research targets. The most characteristic one is in the Red Sea. The deep split in the earth's crust, and the almost parallel movement of the earth's crust's blocks between the African shore and the Arabian peninsula could be considered as the initial stage in the forming of an ocean. Naturally, it is quite interesting to study them and to determine the basic processes triggered in the course of the birth of a new ocean: intensified volcanic and seismic activities, high level heat flows, hydrothermal sedimentation tens of times higher than normal, and a precipitation rich in ore concentrates."

Even though oceanographic research is mainly basic, its final objective, nevertheless, remains practical. This particularly applies to geology. Mankind is threatened by an energy hunger. Minerals, mercilessly exploited in the course of centuries, do not come in an unlimited amount. Faced with this real menace, the scientists indicated that the salvation could be found at the bottom of the ocean. Serious research followed, proving that mineral resources found under the heavy stratum of salt water are practically inexhaustible. Iron and manganese concentrates, polymetal ores, and one-of-a-kind petroleum and natural gas deposits in the North Sea, the Mexican and Persian gulfs, and near Indonesia may be found... Their extraction triggers a number of problems both technical and of international-legal and political nature. Not in the least place is the question of safety measures, for irresponsible human intervention in the sea could not remain without consequences. However, this is not part of our topic. It is more important, in this case, to ask whether the Indian Ocean expedition made its contribution to the study of such deposits.

"To us, geologists, the Red Sea is a true find, unlike the Black Sea which is a one-of-a-kind basin from the biochemical viewpoint. At a great depth, in its most typical aspect, the Red Sea contains so-called hot brine--waters with very high temperature (up to 62°C) and a salinity several hundred percent above normal. They favor the formation of a peculiar residue of ore concentrates whose structure is remarkably similar to that of ancient rocks on dry land. This is a key to the identification of such deposits. A very important contribution of our trip was to establish the existence of salt and gypsum on the surface of the bottom. Previous studies led to the assumption that such deposits are deep beneath that surface. The discoveries of great importance are in interpreting the means leading to the formation of ore precipitations."

What about the results of other geochemical studies? What I am telling you, my collocutor said, is based on preliminary data. The materials are still being processed. For example, we studied a very interesting geological phenomenon: underground slides of materials from nearby shallow parts under the influence of turbid streams in the Somali Depression. A study was made of the volcanic influence stemming from some islands and underwater ridges on the "normal" ocean sedimentation. All of these are observations of great scientific value providing valuable information with the help of which we contribute details to or reassess a number of geological hypotheses.

A total of 25 laboratories, a perfect satellite navigation system which enables us to determine the position of the ship with a 50- to 100-meter accuracy, and special attachments for insuring a dynamic rest in drifting and anchoring are merely part of the advantages offered by the gigantic Akad. Kurchatov. However, its route crossed the tropical zone where dangerous summer monsoons rage (we know that the Indian Ocean is their cradle). Furthermore, the high moisture of the air, combined with the heat is hard on the unaccustomed organism. However, a program was drafted and strictly observed. Work was done not only in the laboratories equipped with air conditioning but on deck as well.

After long sea crossings the sight of unfamiliar shores was welcome. Vivid moments have been recorded on camera and in the mind: a "safari" in the red savanna in Kenya, the wild southern charm of the Comoro Islands, brilliant sand, multicolored fish, and fantastic atolls at the Maldives Archipelago...as well as touching visits payed by natives who came aboard to show friendship and respect for those distant representatives of science.

"What about the boring monotony of the ocean, this lengthy separation from hard land within a relatively enclosed society--was this a burden during the trip?"

"The great merit of such expeditions," said my collocutor, "is the informal collegial atmosphere. This is the merit, above all, of the initiators, of the Soviet oceanographers. Stepping aboard one is among friends and becomes an equal member of the collective."

Viktor Neyman, the expedition's chief, was particularly remarkable among the many rich and spirited individuals. A hydrologist by profession, he was almost as familiar with the Indian Ocean as with his own hand. He happily combined extensive erudition with a variety of artistic interests. In times of rest scientific equipment was replaced with "suspicious" frequency by a painting brush. Not far behind him was Igor Volkov, his deputy in charge of geochemical research. Khrischo Khrischev added the following:

"My contacts with Igor Ivanovich were not only pleasant but very useful. He is an exceptionally great specialist of international fame. Most interestingly, he has studied the Black Sea for many years. We discussed plans for eventual future joint work."

"Which means that aboard the Akad. Kurchatov you merely said goodbye for the time being?"

"Yes, nothing would please me more than for us to see each other sooner..."

5003

CSO: 2202

INTERNATIONAL TELECOMMUNICATIONS CENTER TO BE BUILT IN SOFIA

Sofia TEKHNICHESKO DELO in Bulgarian 18 Jun 77 p 5

[Article by Yordanka Karamfilova: "Bulgaria--A Transit Center For Telephone and Telegraph Traffic"]

[Text] Perhaps few people know that the European plan for the automation of international telephone communications has stipulated that our capital will be an international telephone center as well, equal in rank to Paris, Rome, Prague, and others. Bulgaria's geographic location makes possible the building of a big international telecommunication center in the country, i.e., to create conditions for our communications system to take over the transit telephone and telegraph traffic from Europe to Greece, Turkey, the Middle East, Asia, and Africa. The building of such a center will be undertaken in the course of the present five-year plan.

This will be the basis for an interrelated communications system which will be a subsystem of the joint socialist communications system and of the worldwide telecommunications network. This complex telecommunications center, equipped with modern communications facilities and providing all types of services, will enable us to use our advantages as a transit center for international telephone and telegraph communications. It will be an imposing building in the center of Sofia with a modern architectural solution, and an impressive amount of most modern telecommunications facilities.

In terms of international telecommunications the center will make possible the distribution, rechanneling, and switching 1,800 channels in each of the main directions: Sofia-Bucharest; Sofia-Belgrade; Sofia-Athens; and Sofia-Istanbul.

The first stage of inter-urban network will consist of radio relay lines; the second stage will consist of a ring of coaxial lines.

This will create facilities for the building of a videotelephone network linking all okrug centers with the capital and some okrug centers with each other. Some of the special purpose booths will have simplified equipment to

be used by the customer alone such as, for example, for the exchange of documented information: duplications, letters, photographs, newspapers, and others. The booths will also have systems for receiving and transmitting confidential information coded in advance on perforated or magnetic tape. Small enterprises for which the development of separate centers for the exchange of confidential information would be economically unprofitable will use such booths in the center. Video terminals will make possible to obtain information from a given computer center in Bulgarian and several foreign languages.

The center will also include booths with coin operated sets for international and inter-settlement communications, booths for sound recording, and booths with facilities for automatic banking operations and automated coin changes. The center will include halls and reading rooms operating on a 24 a day basis.

Our capital is a major center for political, cultural, and scientific events. Naturally, this calls for fast exchange of international information. It is precisely such a hall with the respective number of interpreters' booths that will be organized in the telecommunications center. It will be equipped with stationary facilities for simultaneous interpretation into several languages. It will also include a hall for conferences between central managements and their branches consisting, initially, of telephone facilities and, subsequently, of a videotelephone.

The center will also have facilities for automated control, observance, and switching of telephone channels, a hall containing memory systems for the absorption and distribution of information in time, premises for traffic control, and others. It will also include a central laboratory for long distance communications equipment, low frequency and high frequency equipment, and testing of new long distance communications using outer space waves and laser beams, an acoustics hall, a discotheque, and a records library. A central commutation equipment facility will be built for international and domestic exchange of stereo and mono radio programs. For the larger Sofia area the center will channel motor vehicle transportation communications, and communications among mobile construction projects, the administrative apparatus of the big enterprises, the fire prevention service of the capital, emergency services, and others. The center will also include premises for technical documentation of the entire Bulgarian communications system, a technical library, and a computer center which will be developed according to existing needs.

The building of a telecommunications center will create possibilities for telegraph communications to develop as a modern system consistent with steadily growing requirements. New principles for transmission, high speed telegraph communications, and others will be adopted in the international and inter-urban automatic telegraph centers.

The role of telephone services will increase with the building of international and inter-urban automated telephone and telegraph communications.

To this effect the system of services to be provided will be based on modern technical facilities using the principle of electronic memory and microfilms. This center will provide information to all subscribers to the automated telephone and telex Bulgarian network. International telephone services will be developed as well.

Optimal work possibilities will be used in this comprehensive communications center. Its completion will create all the necessary prerequisites for the development of telecommunications between the capital and the rest of the country and the world. This will offer unquestionable possibilities for the expansion of our economic and cultural relations. That is why the development of a communications network in our country is a task of national importance.

5003

CSO: 2202

EAST GERMANY

BRIEFS

FIRST LIVER TRANSPLANT--A research collective of the surgical hospital of the Carl Gustav Carus Medical Academy in Dresden headed by Prof Dr Helmut Wolff has successfully performed the first clinical liver transplant in the GDR. The patient, a 44-year old man who was operated on 6 March 1977 in Dresden, has recovered well and has been released from hospital for home. [East German NEUES DEUTSCHLAND in German 23 Jun 77 p 2 AU]

CSO: 2302

## HUNGARY

### PROGRESS ON REACTOR OF PAKS NUCLEAR POWER PLANT CONTINUING

Budapest ESTI HIRLAP in Hungarian 11 Jul 77 p 3

[Excerpts] The pit in which installations for the Paks nuclear power plant will be placed is 12 meters deep, 250 meters long and 100 meters wide. It will contain foundations for the main building, the walls of the reactor under construction, the steel network of the concrete towers of the security installations. The base plate of the reactor will be a 2-meter thick layer of concrete. Its walls already project beyond the pit by 5 meters. The full height of the hall structure will be 46 meters.

Fuel for the reactor will come from the USSR in the form of pallets having a diameter of 7.5 and a height of 30 millimeters. The 2.5 percent enriched fissionable material will be enclosed in small tubes. Of these, 42,000 will be installed in the reactor. On an average they will be transferred every 7,000 hours before being ultimately replaced. The power plant's cooling water will come from a deep, navigable channel built into the Danube. The basin of the water extracting unit is also under construction: it is 25 meters deep. Water from here is distributed through pipes having a diameter of 3.6 meters. Further along it will be channeled through conduits having a diameter of 2 meters. Once its circulation is complete, it will return to the Danube through hot water outlets which have already been built. The returning water will be only 8 degrees warmer than when it entered the power plant.

In the history of reactor engineering there has never been an occasion on which the supply of cooling water ceased. Ruptured pipes are the greatest threat, but in such a case the "localizing" tower would automatically go into operation. Diesel generators can correct a possible voltage break in 40 seconds. Superpressure can be overcome in 12 minutes: steam building up in an anomalous manner is made to bubble through cooling trays on 12 levels until it is reconverted to water.

Contrary to erroneous belief, the process within a thermal reactor could never lead to an explosion. Furthermore, the security equipment being installed at Paks is more up-to-date than that of other power plants of similar capacity. This equipment has increased the ultimate cost of the Paks

investment by 4 billion forints. The public health authorities of Szekszard are preparing for a continuous surveillance of the area. Measurements will be taken on the ground, in the air and in the water beginning next year, nearly 3 years before the plant goes into operation. These measurements will serve as a basis for comparison. An independent research institute will be organized at the power plant. Furthermore, a chamber for the visual demonstration of the operation of the power plant will be built at Paks. It will be staffed with lecturers ready to answer all questions of workers and students.

CSO: 2502

UTILIZATION OF TECHNOLOGICAL RESEARCH EVALUATED

Budapest FIGYELO in Hungarian 29 Jun 77 pp 1,6

[Article by Dr Andras Roth]

[Text] One of the target programs of the National Long-Range Scientific Research Plan, called K-6, covers the research tasks of the development of the machine-manufacturing technology. The aim of the program is to provide scientific and technical achievements for the advancement of the machine-manufacturing industry. The importance of the program is further increased by the fact that the plan for the economy expects the machine-manufacturing industry to be a major contributor to the export drive, and a prerequisite of this is to operate at the technologically most advanced level possible. (The program was described, among others, in the report submitted by the Department of Technology to this year's general assembly of the MTA [Hungarian Academy of Sciences].)

Research and development in the field of machine manufacture differs in several respects from development of products. One major difference is the fact that a program of this kind is effective if it is usable at a not clearly defined area, which is not known when the studies begin. On the other hand, most product development achievements are utilized by no more than one or two enterprises. Thus, the researcher is aware of the identity of the prospective user when the work begins; indeed, the user sometimes initiates the project. Thus, the fact that the user's identity is not known when a manufacturing-process study begins may considerably delay the spreading and utilization of the results.

Another problem of technological research is that new equipment (such as tools and devices) is also created together with the new processes. But the research establishments do no more than prepare a prototype of such new equipment. It is not their function to manufacture it, and they are not very much interested in doing this anyway. However, the fact is that

the manufacture of the new equipment is generally a prerequisite for the widespread utilization of the new method. While the research establishments dealing with the development of a new product are mostly interested in the large-scale production of the product embodying the development, it is a difficult matter to make the developers of new equipment needed to implement the result of the research and development interested in the volume of production.

In formulating the current five-year plan, the higher authorities were in an easier position than they were years ago when the K-6 program started. This is so since now we have much experience and even the results of a special study since a working committee of the OMF [National Technical Development Committee] evaluated Stage 1 of Program K-6 when the Fourth Five-Year Plan was completed.

According to the results of this study, one of the most significant barriers for the fast introduction of new manufacturing methods is the fact that the cooperation is generally weak between the independent research establishments and the prospective user enterprises. The factories are not much interested in the new developments, mainly because they have no financial stake in them.

Another noteworthy finding of the above-mentioned study is that although results useful to industry can be achieved only by collective work (the joint efforts of researchers, technicians, laboratory assistants, specialists, factory managers), the researchers are primarily interested — as a result of the present method of evaluation — in their personal interests and not in collective work.

Additionally, the domestic research establishments do not use extensively the potentialities of research organization which elastically adapts itself to the ever-changing outside conditions.

As a result of all these factors, there is a broad "no man's land" between the independent research establishments and the user enterprises; thus, the results do not find their way easily to utilization.

It is true that these phenomena are not typically Hungarian phenomena, nor typical phenomena of machine-manufacturing development; they are encountered everywhere in the world. Much has been written about them already. But if we make better use of the potentialities of planned operations and the fact that the state is the owner, we should be able to fight these problems better. However, we must first develop the methods for accomplishing this.

## Let Us Not Do Everything Ourselves!

We can hope to achieve outstanding results only in relatively few projects in the field of machine-manufacturing technology. Thus, the principle of Project K-6 is to carry out primarily adaptation work. It is advisable to acquire knowledge not by a major expansion of the domestic research base but by expanded international and domestic cooperation and by the acquisition of licences and know-how, so that industrially usable results are obtained in minimum time.

The main use of our own research capacity should be to do the extra work which is sometimes needed in conjunction with the acquisition of a foreign method, to perform original research in cases where we are in the forefront and have the required personnel and equipment capability and our projects are promising, to perform work in areas where Hungarian research already has an international reputation, and to perform work prescribed by international obligations. This means that we should carry out fundamental research where we may expect competitive accomplishments and where we have adequate resources which can be channeled toward the project.

Under the slogan of concentrating the research capacity, the governmental bodies recently tried to have the ongoing and promising research projects completed, to publicize the accomplishments, and to ensure that the results are used on a wide scale.

It was mostly due to this systematic approach that the pneumatic robot with a power of 7.5 kp was developed by the Precision Armature Factory in cooperation with the SZTAKI [Research Institute for Computer Technology and Automation of the Hungarian Academy of Sciences]. The device, called "Pneuman 7.5," is built from pneumatic elements already being manufactured on the basis of a licence from Mecman. Its control system is obtained from the Dreloba enterprise in the German Democratic Republic. The factory will build five robots this year.

Another valuable achievement of the work carried out within the framework of the K-6 program is the largely completed intellectual and material base of domestic installation technology based on a licence obtained from the Federal Republic of Germany, which is operational at the General Machine Designing Bureau (for designing) and at Bakony Works (for installations). These two modern bases — designing and manufacturing bases — enabled us, among others, to open a competition under the jurisdiction of the KGM [Ministry of Metallurgy and Machine Manufacture] and the OMFB. The goal of the competition is to achieve higher productivity, savings, and reduction

of personnel through improved tool technology. The entries approved so far modernized assembly work to such a degree that we can save the work of 2000 individuals at a per-capita cost of less than 200,000 forints, which is a relatively low cost.

But the introduction of these two successfully completed projects in industry was not without difficulties. It pays us to discuss these difficulties in some detail since they are quite typical and may be encountered in the utilization of other results also.

#### To Eliminate the "Robot Shortage"

For example, extensive engineering-bureau work is required for the industrial introduction of the Pneuman 7.5 robot on the large scale since the devices are individually designed and special operations are needed to produce them on the assembly line. The enterprise which manufactures the robots is not equipped to do this, and it is not much interested in expending considerable intellectual work for producing an item in small numbers at relatively small profit.

This situation is similar at Bakony Works; there, an additional difficulty is created by the fact that this enterprise also has commercial and stock-keeping difficulties. The factory is prepared to manufacture substantial quantities of the installation-technological devices and to export them on a broad scale. However, for years it has been a problem that there is no proper cooperation with the system designer, the AGTI [General Machine Designing Bureau], where the individual components are properly designed, made, stored, and issued in small numbers as needed. Nor do we know precisely where to design and manufacture some special parts and devices, such as holders.

In order to create widespread industrial use of the installation-technological devices and operations we must have a system of material incentives.

These symptoms, which are evident in other areas to some degree also, show clearly that a key question of the technical development of our machine-manufacturing industry is to make the specialized enterprises interested in performing all those services which are required for the economical utilization of their products, even if they represent only a fraction of their total production. A general solution of this problem is, in my opinion, necessary if we are to spread the results of the K-6 program in industry.

### Is It Easier Personally?

Both the KGM and the OMFb attempted to establish the identity of the prospective users before research work has started in all new projects, based on experience with earlier projects. The prospective users were indeed located at the time when the project was formulated. It was then possible to include the one or two industrial enterprises concerned, and offer them incentives to entice them to participate in the work.

If we are to come up to the level of the developed countries in terms of industrial development, we must monitor carefully the growth of machine-manufacturing technology in foreign countries, attempt to procure the knowledge which we can use successfully, and introduce this knowledge at home. It is advisable to acquire knowledge from friendly countries, primarily the Soviet Union, and to expand the field of joint developments. New methods may be used in the exploration of the methods developed in friendly countries. Very often it is the personal relationships rather than the official contacts which are fruitful, considering the fact that in these countries there are no traditions about the foreign marketing of intellectual achievements, that the organizations established to do this are still inexperienced, and that their incentives are often not very exciting. This is the main reason why our mutual integration is generally not as good as it should be.

One of the goals of the K-6 program is to initiate long-range research projects, of which the expected results have no current usefulness or would represent an undue risk for an industrial enterprise.

For example, the study initiated by the OMFb, the KFKI [Central Research Institute for Physics], a number of universities, and the machine-tool manufacturers to explore the industrial uses of laser technology are of interest for the long range, is one such project.

Insofar as the machine-manufacturing as a whole is concerned, those development themes are the most interesting which are aimed at changing the "technological apparatus" of some major enterprises. Such projects require considerable investment; thus, joint action by the KGM and the OMFb is needed, and we must also acquire several foreign licences and know-how. One example is the agreement concluded by Csepel Iron and Steel Foundry for the acquisition of a Soviet licence for precision casting, and for the procurement of the equipment and technology for this method.

A contract came already into effect within the framework of the K-6 program, according to which a specialized electron-beam welding facility will be set up under the sponsorship of the OMFb and the HIKI [Research Institute for the Communications-Technological Industry]. The entire machine-manufacturing branch will benefit from this facility since it will perform contract work for any other industrial enterprise (!).

The course of the K-6 program so far showed us that the organs responsible for development design and research administration must continue to monitor the projects even during the stage of industrial implementation and to offer their assistance for the elimination of any obstacles that are encountered. This is an important factor. Thus, the first realization of the results of research should preferably be supported from budgetary funds in some cases. (Wouldn't it be better instead to strengthen the enterprise incentive system and at the same time the enterprise risk-taking system? [editor's question]) Of course, we see clearly that the K-6 program in itself cannot contribute significantly to the improvement of the profitability of the production of the industry branch, no matter how hard we try to be highly efficient in research and spreading the results. This task must be accomplished by means of direct methods, for example investments, work and production organization, and better social work.

The role of the K-6 program is an indirect one for the machine-manufacturing industry: it works out, selects, domesticates, and teaches those methods, processes, and devices of which the widespread use may bring about the sought-for results. Thus, the role of the program is to create the foundations of the reception of the new technologies, to create the necessary prerequisites, and — primarily — to create the atmosphere which attracts and compels new ideas and realizes the investments required for utilizing them.

2542

CSO: 2502

HAIL AVERTING SYSTEM PROVING EFFECTIVE

Budapest NEPSZAVA in Hungarian 19 Jul 77 p 5

[Text] Storms and hail caused 500 million forints of damage over the past weeks. What experiences have there been with the hail averting system already in operation in Baranya County? From the first of April through October, Soviet radar screens surveil the clouds in a 50-kilometer radius to determine the degree of hail danger. In case of danger, the duty officer at the central station gives the command for the launching of rockets from the 11 launching stations located in the Siklos, Mohacs and Pecs districts. The dispersing equipment goes into effect 15 seconds after launch, and releases lead iodide into the clouds. This "injection" changes the overheated droplets into small ice crystals, so no hail is formed. Establishment of the complete system cost 50 million forints. This appears to be very expensive, but a study of the claims figures of the State Insurance Company for last year shows that it is a far from costly investment. In theory, the investment can be realized in a year, because the insurance has paid 130 million forints for hail damage in Baranya in the course of a single year.

Naturally, the averting system does not provide total security. On the other hand, there were no catastrophic hail storms; damage was greatly reduced as compared to the past. Hail struck isolated areas of 100-200 hectares within the 130,000-hectare protected area. The insurance company also considered the protection a success, but we also could call it a test.

The experiment will last through the end of 1979; then specialists will prepare an evaluation of the experiences. One thing is already certain: though this excellent system is used in few parts of the world to date, the results are encouraging.

CSO: 2502

## HUNGARY

### BRIEFS

HUNGARY'S PHYTOTRON--Of the several dozen excellent varieties of corn used by Hungarian agriculture, most were developed at the agricultural research institute of Martonvasar. The hybrids of said institute account for two-thirds of the hybrid corn seed used in the country. The state showed its appreciation for the work of the institute by making it the site of the country's first phytotron. The major equipment of this facility was delivered by a Canadian firm. The phytotron permits two to two-and-a half crops to mature annually. It also permits all possible variations of climate. The equipment has been in operation at the institute for 5 years, and it has already perceptibly speeded up the development of new varieties. The institute has put a dozen new corn hybrids at the disposal of agriculture and has achieved great results in the production of intensive varieties of Hungarian corn. The officially accepted five new kinds of wheat not only compare favorably with the best foreign varieties, but two of them actually surpass them. Martonvasar wheats are more resistant to diseases prevalent in Hungary; furthermore, they adapt better to the local climate than their foreign counterparts. In addition the new Hungarian wheats have yielded 70 - 80 quintals per hectare in field tests. The seed is now being propagated, and in 1 or 2 years Hungarian wheats will be sown on the larger part of the growing area. [Budapest HAZAI TUDOSITASOK in Hungarian 15 Jul 77 pp 4, 5]

CSO: 2502

STATUS OF ANTIALCOHOLIC DRUG REVIEWED

Bucharest FLACARA in Romanian No 24, 16 Jun 77 p 22

/Article by Dumitru Graur: "Antiol: So Far Neither Yes Nor No!"

/Text On 10 January 1976, in a lead article in its first issue for last year, FLACARA reported, "Over 4 years ago a Romanian pharmacist invented the drug for almost immediate recovery from the most advanced alcoholic states." We quote one of the first passages from the text of the article: "... Nicolae M. of Timisoara, aged only 17 years, bet his friends 150 lei that he would drink a whole bottle of cognac by himself and on the spot! Drunk all at once, a liter of cognac contains much more than a lethal dose of alcohol, even in the case of an "experienced" and "practiced" drinker. This youth emptied almost three quarters of the bottle and then fell limply to the ground. He was taken home and put to bed and... not taken to a hospital by his parents until the second day, when he showed all the characteristics of a deep coma. Only 45 minutes after an injection with the preparation invented by Tiberiu Danciu the youth miraculously awakened and was able to walk. He hesitated a little and then was able to walk home, perfectly well."

A few days later, on 25 January to be exact, the Associated Press reported to the world at large:

"The journal FLACARA recently announced that a Romanian pharmacist has discovered a drug that can sober up the most incorrigible drunks in less than an hour.

"A youth of 17 bet 150 lei that he would drink a whole bottle of cognac and fell into an alcoholic coma after drinking three quarters of it. He was taken to a hospital and injected with the said preparation, and after 45 minutes he was able to walk home.

"The traditional methods of treatment require extensive and costly medication, including vitamins and analeptics (fortifying drugs), and the treatment takes from 12 to 36 hours.

"The antialcoholic drug, which does not treat alcoholism but the effects of alcoholic intoxication, was perfected in Romania in 1971.

"In 1972 and 1975 the drug was patented in the FRG by the Deutsches Patentamt and in the United States by United States Patents.

"It is said that the drug, which can be administered in injections or in the form of tablets (in less serious cases of intoxication), has a twofold effect: It protects the nerve cells and the main internal organs (the liver and heart) and accelerates the metabolism of alcohol by 15-20 times, ultimately lowering the level of alcohol in the blood.

"The chemical composition of the sobering drug has not been revealed."

On 19 March 1976, at the headquarters of the ICSMCF [Institute for State Control of Drugs and Pharmaceutical Studies], the memo bearing the number 3,062 was drafted by Lecturer Dr C. Baloescu, director of the institute, Pharmacist Dr I. Cruceanu, secretary of the Commission for Drugs and Drug Control [CDDC] (on behalf of the ICSMCF), and Head Pharmacist Tiberiu Danciu of Timisoara. The memo said, "The recommendations of new drugs made by the latter were discussed and the following points were determined:

"1. In connection with the drug Antiol for combatting alcoholic states, the authors will send the ICSMCF 25 bottles of Antiol, prepared according to two formulas, for purposes of general laboratory control..." (The next four points concern other recommended drugs we will not discuss here, namely "an antirheumatic drug preparation," "soluble and injectable acetylsalicylic acid," and "potassium aspartate and potassium trisaspartate.")

Also last year the Romanian specialists in Romconsult [Romanian Consulting Institute], a body specializing in "export of Romanian expertise," repeatedly considered the possibility of interesting some well-known American and Canadian firms in purchasing the license for a drug to combat alcoholic states. Tiberiu Danciu was immediately summoned to Bucharest and the possibilities of carrying out such a project were investigated jointly with the specialists from the OSIM [State Office for Inventions and Trademarks]. Ultimately nothing could be accomplished because there was no patent holder and because the CDDC had just begun laboratory control operations at the time.

On 16 September 1976 Tiberiu Danciu received a package at his pharmacy in Timisoara, with the note: "We are sending you herewith 1 kg of THAM [expansion unknown] substance to prepare the Antiol tests. Out of this please send us a quantity sufficient for laboratory control." The Timisoara pharmacist replied on 24 September, confirming receipt and promising to prepare the tests for laboratory control.

On 16 November last year Danciu sent another letter to Bucharest with enclosures: "... I am forwarding herewith 30 bottles of formula I Antiol, of 50 milliliters, and 30 bottles of formula II Antiol of 150 milliliters apiece. Best regards..."

And so here we are, a year and a half after the publication of the preceding article, once more on the track of the "drug for treatment of intoxication with alcohol," bearing OSIM invention certificate No 55,542 of 12 August 1971. In

the meantime, as you could observe, the said drug was named Antiol by an acronym of the words "anti" and "alcohol." Meanwhile, as you also observed, a number of things happened that entirely justify returning to the subject. For the moment let us return to another passage in the article published in January 1976, which tries to explain the "modus operandi" of the preparation. "Everything was based upon the previous purpose of synergizing some substances, of 'harnessing' both of them together if you will, one for cellular protection and the other for metabolic stimulation with the effect of recovery from the state of fatigue. In this way we succeeded in obtaining both enzymatic reduction of the alcohol in the bloodstream and protection of the vital organs, especially the heart and liver. The main therapeutic advantage is better use of the metabolic oxygen, permitting use of the drug in the case of local or general hypoxies too. But its main use is to accelerate the capacity to absorb alcohol and to increase the specific metabolism by about 15-20 times, according to the individual resistance."

In Timisoara we talked to Prof Dr Docent Stefan Gavrilesco, rector of the Institute of Medicine and joint author with Tiberiu Danciu and Caius Streian of the invention to which we are referring again. He told us, "It is quite true that the discovery was made almost by accident, over 6 years ago. We were concerned, as we are now, with arrhythmias and other cardiological problems. Actually we were testing the solution called Tris for purposes of stimulating the production of metabolic oxygen in intensive therapy, especially for states of revival. But we saw on this occasion that the solution can also accelerate the metabolism of alcohol in an organism. Then it occurred to Danciu to associate Tris with an aspartate functioning as a buffer to protect the internal organs. He then made the complete solutions and we began to test them in the reanimation section of Timisoara Hospital No 1, and the results were encouraging it is true. We patented the process in order not to lose precedence, but I wish to acknowledge that we had neither the time nor the facilities to make an intensive metabolic study. What we did is rather to be called an amateurish study. And there is no question that a drug cannot reach patients that way, especially since its effect must be well documented by specialists specially equipped for the purpose."

At the ICSMCF in Bucharest we talked to Lecturer Dr Corneliu Baloesco, director of the institute, Pharmacist Dr Rotislav Vasiliev, deputy director, and Pharmacist Dr Ioan Cruceanu, the laboratory head. We found on this occasion that the recommendation of the drug is now receiving due attention. It is of interest and consequently the tests for control submitted by Tiberiu Danciu have been introduced in the laboratories of the institute. The analyses must be as detailed as possible and therefore will take some time. How much time is very hard to say, namely as much as will be needed to remove the slightest doubt on the part of those authorized to say yes or no, when they are convinced that nothing can impair the health of those treated. It is certainly a long and difficult road, but as we have found secondary effects are not to be taken lightly. The men of the institute regularly make, on the spot, very crucial scientific studies, often superior to the findings they receive for approval.

Meanwhile the Laboratory of Pharmaceutical Organization and Technology has given its approval from the standpoint of chemical composition, maintaining that the component substances of the product are compatible but there is a question

whether they will remain so in storage, so that the chemical stability of the drug will have to be studied too. On the other hand the Laboratory for Studies and Biologic Control, upon analyzing mice and rabbits injected with Antiol, established the lack of toxicity and a good performance of the product for animals. Accordingly the preliminary pharmacological data showed favorable and encouraging results, on the basis of which the CDDC should decide to start clinical testing.

Director Corneliu Baloescu told us, "The tests analyzed in the institute's laboratories showed a number of favorable results, especially in regard to the pharmaceutical formula, but with reservations about the stability studies! The investigations are now in the stage of determining the clinical procedure. This means that the procedure is being prepared for clinical testing of the product, that is the testing conditions are being determined for checking the effects of the drug upon patients, thus forming a true hypothesis as to the methods of administering the drug, the mode of application, the number of patients studied, the quantity administered, the effectiveness and the tolerance, in other words practically everything!" But the deputy director of the institute, Rotislav Vasiliev (both a pharmacist doctor and a chemical engineer), had to ask us to be as careful as we can to create as few illusions as possible for any persons to be treated. He said, "Let us avoid sensationalism at any price, lest your article convey the impression that we are extremely optimistic and that in just a few months alcoholics will have the panacea with which they can conceal their vice from the world. In the first place it should be known that we are testing the product in its injectable form only, which can be used in cases of alcoholic coma. Meanwhile there is nothing about the so-called 'pills for drunkenness.' In any case we are going on with the investigations, and that too with the greatest interest!"

And so that is the current state of the "drug for treatment of intoxication with alcohol." Obviously it no longer belongs to one man or even to the collective of authors. Beyond the unexpected distortions of the foreign press agencies, it has become a subject of serious and competent research worthy of wider attention. Perhaps the day is not far off when Antiol will become a current name in our pharmacies, something to which the weekly called FLACARA will be proud to make a major contribution! But in the meantime let us follow Dr Vasiliev's advice and not be too hasty. And so we shall return...

List of Patents Obtained in Romania and Abroad for Inventions Connected with the Name of Timisoara Pharmacist Tiberiu Danciu, Most of Them Under Investigation Today in the Bucharest ICSMCF

1. "Filter with Horizontal Plates" (Inventor's Certificate No 52496/1968 -- authors Tiberiu Danciu, Maria Danciu and Valeriu Podeleasu).
2. "Process for Preparing Perfusable Glucose Solutions" (Certificate No 54090/1968 -- authors T. Danciu, M. Danciu and V. Popovici).
3. "Drug with Protective and Metabolic Effects Upon Hepatic and Cardiovascular Ailments and States of Fatigue" (Certificate No 55069/1968 -- authors Stefan Gavrilescu and Tiberiu Danciu).

4. "Drug for Treatment of Intoxication with Alcohol" (Certificate No 55542/1971 -- authors Stefan Gavrilescu, Tiberiu Danciu, and Caius Streian)
5. "Filter with Horizontal Plates" (Certificate No 58007/1972 -- authors T. Danciu, M. Danciu, and Sabin Nicolae Dancu).
6. "Medikament zur Behandlung von Alkoholvergiftungen" (Offenlegungsschrift No 220876/1972, granted by the Deutsches Patentamt, FRG -- authors St. Gavrilescu, T. Danciu, and C. Streian).
7. "Method of and Composition for the Treatment of Acute Intoxication with Alcohol" (United States Patents No 3876783/1975, USA -- authors St. Gavrilescu, T. Danciu, and C. Streian).
8. "Soluble and Injectable Acetylsalicylic Acid (Aspirin)" (Certificate No 78891/1976 -- authors T. Danciu and M. Danciu).
9. "Soluble and Injectable Acetylsalicylic Acid (Formula II)" (Certificate No 78892/1976 -- authors T. Danciu and M. Danciu).
10. "Soluble and Injectable Acetylsalicylic Acid (Formula III)" (Certificate No 78568/1976 -- author Tiberiu Danciu).

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