16 APRIL 1979 (FOUO 2/79) 1 OF 1

APPROVED FOR RELEASE: 2007/02/09: CIA-RDP82-00850R000100040037-6

JPRS L/8401

16 April 1979

EAST

EUROPE

TRANSLATIONS ON EASTERN EUROPE

SCIENTIFIC AFFAIRS

(FOUO 2/79)

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CONTENTS PAGE

MINICOMPUTER PRODUCTION IN SOCIALIST COUNTRIES SURVEYED

Prague AUTOMATIZACE in Czech No 11, 1978 pp 285-289

[Article by Jiri Caka, Ministry of Metallurgy and Heavy Engineering in Prague: "The Significance of International Cooperation of Socialist Countries in the Joint Program of Minicomputers of the SMEP Series"]

[Text] The natural result of successful cooperation within the framework of the Intergovernmental Agreement on Cooperation of Socialist Countries concerning the Uniform System of Electronic Computers (JSEP) was that it was necessary to create a second branch of computer engineering--small computers and minicomputers. This joint approach was made also because the number of the users in all participating countries was so large that each country designed and produced its own control computer in the system of minicomputers. This method of individual planning prior to the initiation of the joint work on the SMEP [uniform series of minicomputers] was dissipating greatly the research and development forces and could not provide for mutual use of either their own processors or of a wide assortment of accessories. The situation was similar in programming means.

In a joint analysis prior to the decision creating a uniform series of minicomputers (SMEP), it was also necessary to take into consideration the fact that in capitalist countries during recent years the number of different types of minicomputer systems and the number of their applications in all industrial and nonindustrial areas have kept increasing very rapidly, because these systems resulted in high production efficiency.

In the socialist bloc countries which participated in the "agreement," it was a very appropriate time to start working on a joint uniform series and to create conditions for gradual elimination of minicomputers which had already been introduced individually, while taking into consideration the good starting base for research and production in individual countries.

At that time, individual socialist countries were manufacturing in particular the following types, and some of them are still being manufactured today:

USSR--control computers of the ASVT-M series (M-5000, M-6000, M-7000, M 400, M-40, and other), which were and continue to be the technical base for additional automated systems, particularly for control of technological processes;

GDR--Robotron--4000 series and other types

POLAND--MERA--300 series and other types

BULGARIA--IZOT-300

HUNGARY--TPA-70, TPA-11/40 and the capability to use EC-1010

CUBA--CID-1000, CID-2000

ROMANIA--FELIX-32

CSSR--The base consisted of the series ADT 4000 and RPP-16, in addition to certain other types.

This situation was the result of uncoordinated activities of the participating countries in the minicomputer program.

For example, the situation in the CSSR as of 31 October 1977 in the area of control computers, small computers, and minicomputers was as follows:

Table 1.

Number of Computers		Manufacturer's Country	Type
Total in CSSR: 356			
including:	150	CSSR	PPC-4; RPP-16S a RPP-16M; RIP 1000; ADT 4000, 4100, 4316
	91	USA	CDC 1700; Nova 1200; PDP 8, 8E, PDP-11-E/10, 11/10, 11/15, 11/20, 11/34, 11/40, 11/45; EHI-100/640; 640/680; GE-PAC 4010; HP-2116 C, 2100, 2100 A, 2100 S; IBM 1800; IBM-system 7; Varian 6201, 620/L100;
	29	USSR	M 6000; M 7000;
	27	GDR	RSR 4000; KRS 4200;
	19	Federal Republic of Germany	Mincal MC4; Siemens 101, 305, 320, 330
	18	England	Redcar RS 70-S 90; Elliott 803A, 803B; KDF 7; Argus 600, 500; GES 2050; 201;
	16	Hungary	EC 1010
	3	France	CAE 510; T 2000;
	3	Israel	Melog-100;

The Council of Principal Constructors of Minicomputer Systems (RHK-SMEP was created in 1974 with participation by Bulgaria, Czechoslovakia, the Republic of Cuba, Hungary, GDR, Poland, Romania, and under the leadership of the USSR.

Even though the newly created area has its special characteristics, it was possible right from the beginning to utilize to the maximum the experience tested successfully by the joint program of the JSEP series. It is a pity that when work began in this sector, it was not based systematically on the existing technical means, particularly peripherals, (?)processing units, methodologies of joint tests, norms, and so on. Their new handling resulted in a number of difficulties and often also caused delays.

The difference between the SMEP and JSEP is above all in the price of the entire systems. This makes it necessary to achieve maximum simplicity and a high degree of reliability. Another difference is that the new equipment is expected to be gradually applied on a mass scale in various areas of the national economy. In the opinion of Soviet specialists, the prices of SMEP should vary in the future from 1,000 to 200,000 (and up to 300,000) rubles in systems operating at a speed of 5,000 to 10,000 and in the long run up to 1 million operations per second, with the capacity of the operational memory from 2 to 4 up to 256 kilowords.

One of the most important conditions of a rapid development of both systems, that is, of the SMEP and JSEP, is the creation of a new, progressive, and inexpensive parts base. Such a base should be established within the framework of maximal division of labor of the participating states of the MVK [(?)intergovernmental commission], because of the need for short-term deliveries.

When cooperation was established between the RHK and the SMEP, organizational measures were adopted to provide for joint development, the so-called formation of creative international organs which began immediately to operate on the basis of experience gained earlier in the original country in the given sector of computer engineering.

The foundation for joint work was [illegible] by creating a complex set of SMEP-1 minicomputers.

The system of SMEP-1 minicomputers is designed as a system complex of technical and programming means of computer technology, established in harmony with adopted (or, for the time being, recommended) norms and standards. The mutual relationship of the systems is designed in the form of uniform joint design and a particular construction. The SMEP series is designed, above all, for the construction of automated systems of management of technological processes (ASR-TP), for scientific-technical work centers, including automated control of design work, and also for cooperation in automated management systems in nonindustrial areas, and in some cases in subsystems for mass data processing or primary data collection and preprocessing of data.

The technical level of the design corresponds to the present technical state in the world, but at the same time it makes it possible to switch gradually to a higher level, on the assumption that the systems which will be expanded are those corresponding to the level of the applied ASR systems.

The creation of the JSEP and SMEP systems, which as a whole supplement each other, provides a technical base for the creation of control automation and mass data processing in all areas of the national economy of the socialist countries. Good results in these programs depend in particular on the following:

--complex utilization of the joint scientific, technical, and production potential of all participating countries;

--a high level of adaptability of technical and programming means of the SMEP for the proposed handling of the management systems;

--provisions for further development of the systems for the handling of new tasks;

--creation of conditions for a maximum reduction of time limits applicable to the finishing of development work and prompt starting of production with minimal losses while introducing the SMEP;

--possibility of creating multiprocessor computer systems to increase operational efficiency;

--application of the systems of computer technology in the ASR for design work;

--quality improvements of the technological level of production and solving the problem of technical and programming means, together with utilization of higher integration of the uniform base;

--increase of operational reliability accompanied by creation of conditions for decreasing the costs of the systems.

All these conditions are realistic within the framework of joint work. The system of mutual operational procedures applied in the international division of labor and concentration of the scientific-engineering potential proved to be fully effective. International cooperation provides for effective development of the uniform systems founded on a joint technical-programming base.

Current programs for SMEP-1 of the first design have been worked out in terms of their development, and in certain cases the systems have been gradually put into production and delivered to the users right after the international tests had been carried out. The entire international collective shares in the work on the entire nomenclatorial set of processors and peripherals, and that provides for gradual application to the production process in individual socialist countries. For example, the manufacture of CM-1 and CM-3 processors started in the USSR as early as in 1977.

The international system of small computers and minicomputers of the SMEP-1 series includes in nomenclature the following basic types of processors and main groups of equipment:

1. The basic series of processors consists of four basic types of minicomputers as follows:

Table 2.

Poř. č.	(1) Charakteristiky	(2) Měrná jednotka	(3) CM-1 (SSSR)	(4) CM-2 (SSSR)	(5) CM-3 (SSSR)	(6) CM-4
1	Princip řízení		(a) mikroprogram.	(a) mikroprogram.	(a) mikroprogram	(a) Nejvyšší z řady SMEP - 1, jehož parametry jsou dosud zpřesňovány
2	Řídicí paměť:					
	— počet binárních míst		18	36	32	
	— kapacita paměti	(a) počet slov	4096	4096		
	— pracovní cyklus	μs	0,3	0,3		
3	Počet prac. registrů adres.:					
	— v programech		5	6	(b) 8	
	— mikroprogramech		30	17	32 K (4 K pro adresaci registrů PZ)	
4	Kapacita registrů	bitů	(b) 16	(b) 16,32	(c)	
5	Systém přerušování		mnohoúrovň.	mnohoúrovň.	mnohoúrovň.	
6	Doba plnění zákl. operací					
	— sčítání s pevnou/pohyblivou čárkou	μs	2,5/—	2,2/18,0 —40,0		
	— násobení s pevnou/pohyblivou čárkou	μs	2,5	10,0/23,0		
	— přenos řízení	μs	36,0/—	1,8		
7	Kanál přímého vstupu do paměti					
	— princip řízení		(a) mikroprogram.			
	— max. rychlost změny dat v monopol. režimu	(b) 1000 slov/s	250	700		
	— rychlost změny dat při současn. činn. procesoru	(b) 1000 slov/s	(c) 100			
8	Operační paměť:					
	— počet binár. míst		18 (16 informač., 2 kontrol.)	18	18	
	— max. kapacita paměti	Kbyte	do 64	(c) do 128	32	
	— prac. cyklus	μs	1,2	1	1,2	
9	Počet připojitel. přid. zařízení:					
	— při současn. adresaci	(c) do	55	56		
	— s použitím rozšíř. modulu při dvoustupň. adresaci	(c) do	1725	1704		

Key:

1. Serial number — Characteristics

Serial number	Characteristics
1.	Principle of Management
2.	Control Memory:
	--number of binary places
	--memory capacity
	--operational cycle
3.	Number of Operational Registers addressed in:
	--programs
	--microprograms

[Key continued on following page]

4. Capacity of Registers
5. System of Interruptions
6. Period of Implementation of Basic Operations
   --addition with a fixed/mobile comma
   --multiplication with a fixed/mobile comma
   --control transmission
7. Channel for Direct Input in Memory
   --principle of management
   --maximum speed of data changes in a monopoly regime
   --speed of data changes with simultaneous activity of the processor
8. Operational Memory:
   --number of binary places
   --maximum memory capacity
   --operational cycle
9. Number of Attachable Accessories:
   --with simultaneous addressing
   --with use of expanded module and two-stage addressing

2. Measuring Unit
   a. Number of Words
   b. 1,000 words per second
   c. up to
3. CM-1 (USSR)
   a. microprogram
   b. multilevel
   c. 18 (16 information places, 2 control places) to 64
4. CM-2 (USSR)
   a. microprogram
   b. multilevel
   c. up to 128
5. CM-3 (USSR)
   a. microprogram
   b. 32 K (4 K for addressing of PZ registers)
   c. multilevel
6. CM-4
   a. The highest one of the SMEP-1 series, the parameters of which are still being made more precise.

2. The nomenclature of the SMEP-1 series also contains more than 70 different independent installations used to complete the systems. In addition, one can use certain peripherals or (?)processing units of the nomenclature JSEP 1 and 2.

Classification in the main groups:

I. Processor system installations

--system communication installations

--internal operational memories

II. External accessories:

--magnetic tape memories with control unit

--magnetic disc memories with control unit

--input and output equipment on perforated tape with control unit

--input scanners for punched cards

--alphabetic-digital printing machines of different designs

--graphic input and output equipment

--input and output equipment for magnetic media

--input and output equipment with a keyboard

--alphabetic-digital displays, including intelligent terminals

--equipment for long-distance data transmission.

III. Preparatory equipment for data processing:

--magnetic tape

--magnetic disc

--perforated tape

--punch-card.

IV. Equipment for contact with environment:

Together with the unfinished nomenclature of the SMEP-1 technical means, it was necessary to work out also the nomenclature for the development of programming means. It was decided that the extent of programming means of small SMEP-1 computers was determined by their production, subject to certain limitations, the limitations being determined not only by the technical characteristics, but also by the limited use of the memory capacities. Efforts are being made to simplify the programming means of small computers as compared to the JSEP series.

Also, in the case of lower models, it is usually effective to use programs selected from minicomputers which were manufactured before as national products and which by their technical characteristics corresponded to the nomenclatorial types.

It has turned out that operational systems of small SMEP computers are simpler than computers of the JSEP series used for data processing on a mass scale, because they do not require broad universal applicability and many service and control functions are handled directly by instruments. That is why these instruments can also be used effectively to deal with the next main assignment of the given type of small computers, namely, to provide for multiprogramming activities within a realistic period of time.

On the other hand, it is necessary to provide for the operation of small computers in the systems and under the required regimes (for example, real time, data collection, dialog, divided time, and so on), which are designed for purposeful and efficient creation of sets of operational systems.

It is very important to facilitate operation for users by programming various application assignments. The plan under preparation also counts on provisions for a system of microprogramming and on a library of finished programming modules which the user will merely supplement for the given functions. Also in the process of development at the present time is a design for higher efficiency in problem oriented programming languages, including construction of corresponding translators.

When small computers are used for development work, there will be available, above all, programming systems means for use in operations which involve quantities of data of a complex structure, and these data will make it possible to create and maintain local information banks and information-research systems.

Considerable attention is being paid to the question of how to increase the reliability of programming means by expanding dependent control operations and functions, which will create operational reserves.

Future work is oriented to the development of mechanization, that is, automation of the production of programming means, including the required volume of documentation of the programming sets.

The creation of the SMEP series provides conditions for achieving a higher, complex technical level of the various types of ASR systems which pursue the following aims:

--rational combination of centralized and decentralized control functions in technological and scientific-experimental processes, in the creation of process control systems by means of integrated indices or nonmeasurable values;

--creation of an adaptive control system based on greater accuracy and verified information, prescribed control of the parameters of a process combined with information control;

--development of assigned dispatch functions and operational corrections, and their functional redistribution between the ASR-TP and ASR-P by separating primary information from bank information. It is expected that this will expand the system of operational control of production in mechanical engineering to include also the handling of assignments at the level of production departments, such as, for example, automatic collection of information about the movement of the products and the condition of the equipment, adaptive control by conveyor, including the feeding mechanism and transportation of finished products, numerically programmed control of machine tools, and so on, all done in combination with a central computer of a higher type;

--use of SMEP in testing centers, including diagnostic complex processes. Single-purpose systems can be used for these purposes at the level of input control, continuous control, and output control, but also at the same time as multipurpose control systems for unrelated production within the framework of the production enterprise. The condition for these systems is the capability to optimize assignments.

It is also expected that the SMEP system will be used both in the present form as well as in accordance with long-range plans, particularly plans for additional special-purpose systems, for example, for the following areas:

--elastic control systems of nodal and grouped forming machines, including their autonomous control;

--information gathering concerning the production process in relation to dispatch control;

--gathering, preprocessing, and transmission of mass data;

--information-control systems, for example, in the power industry, chemical industry, in mining for purposes of safety service, and so on;

--integrated organizational-technical management and control systems of components of large experimental centers, including hierarchic complexes;

--management and control systems in laboratories, warehouses, small organizational units, including satellite-type combinations with a central computer;

--systems for long-distance transmission of mass data coming from decentralized work centers (transmission or communication networks);

--training systems in various fields, such as, for example, in aviation, driving, railroad transportation, and so on;

--simple and complex systems in the entire area of health services, ranging from diagnostics through various types of laboratory tests and examinations by instruments, with possibility of connecting the systems with a central computer of a higher class;

--systems and subsystems in the field of finance, including long-distance data transmission, conversation with a computer, all the way to preparation of documentation in combination with the central computer.

The given examples are only a part of areas of the expected utilization of the SMEP minicomputer systems, which operate mostly in combination with a computer of a higher type. The universal use of the given minicomputers also provides favorable conditions for effective division of labor. Of course, it is assumed that the participating countries will supply systems which will be oriented to special purposes and will provide an adequate amount of programming means, particularly application programs, in such a way that the systems could be used at the maximum rate of efficiency within the shortest period of time after installation.

If the decision to create an international organization for cooperation in the area of SMEP computers within the framework of MVK is evaluated correctly, then the results of joint work achieved so far create favorable conditions for prepared joint prospects for action in this sector. According to the plans of the management organs of the RHK-SMEP and the prepared coordination in the development of minicomputers, the international collective of scientific workers, engineers, mathematicians, technicians, and manual workers is confronted with clearly outlined creative tasks. Professional circles have been informed partly about these joint operations by Comrade B. N. Naumov, general construction engineer of SMEP, and by Academician V. M. Glushkov, the chief initiators of that cooperation. The joint path which has been followed and its first results are a guarantee for further development of this area of computer engineering.

The contributory articles presented for discussion by both of these top representatives of the international collective indicate that the main task at present is to design a new, progressive components base including microprocessors used as modular elements. The use of microprocessors is universal, but for our area they have a great significance, for example, for the control units of peripherals and terminal elements within the framework of an entire large control system. The component elements are unified according to structural needs. Their application will considerably simplify the structural units and will enable a more effective way of expanding rapidly existing future systems. In the same way, there will be greater opportunity for, and greater reliability of, the mutual compatibility of domestic minicomputer systems within the SMEP series as well as in combination with a higher central computer.

The use of microprocessors will bring about considerable changes in the SMEP nomenclature for peripherals and transmission equipment. At the same time, the domestic equipment will become simpler and its reliability will increase.

The use of the new components for basic elements, including microprocessors, provides good conditions for increasing the serial production of individual technical means of the system. The utilization of the new elements and increased serial production also have a favorable effect on the prices of products. The high degree of modularization and reliability of the elements make it possible to compose the most effective technical components, a so-called "computer made to measure." The SMEP-1 concentrated on creating a series of a minimum number of independent basic processors (4 types), while the planned series SMEP-2 creates a set of computer systems for a maximum range of use.

The SMEP-2 classifies the proposed series of computers into several classes, which are subdivided further into specific types of computers.

The first class consists of a group of microcomputers, which contains six different types related to each other according to their function in the system:

--logical control with limited functions, for the area with the highest coefficient: for example, the automobile industry and consumer goods industry, and so on);

--universal control elements for peripherals;

--for functions of the program interconnection processor (for example, channel adaptor);

--autonomous use--universal 8-bit microcomputer (for example, technological processes, preprocessing of data, automation equipment, and so on);

--for handling of higher functions in autonomous or multiprocessor systems, a universal 16-bit microcomputer compatible with the SMEP-1, CM-3P and CM-4P minicomputers;

--for the larger computer systems a 16-bit microcomputer, which is not compatible with the SMEP-1 series and can also be used for ASRTP.

The second class is formed by two basic types of emulation types as follows:

--universal emulation computer, which provides fully for the functions of existing minicomputers in operation and in production (for example, the Czechoslovak series AST 4000 and RPP-16, the Soviet series M 4000, and so on), and must utilize fully the existing application programs;

--emulation computer used for a multilanguage structure, designed for a transition to higher, more progressive types of SMEP microcomputers and to new application programs.

The third class consists again of two main types: these are now represented by SMEP-2 with words of greater length. They are:

--megaminicomputer with words of greater length, operating first of all in real time, which provides for control at upper hierarchical levels;

--an analogous megaminicomputer with greater efficiency and reliability for systems of high control and operational requirements.

The fourth class consists of four basic types of larger, complex multiprocessor computers.

These are also based on the SMEP-2 series.

--They are to be used primarily as control systems at the level of analog numerical regulators in numerical control systems and for purposes of automated regulatory and control equipment. They are not compatible with SMEP-1;

--it is expected that they will be used primarily in real-time processes and for control of complex scientific experimental studies. Programs obtained from SMEP-1 will be also applicable for this type. In practice, this applies to the multiprocessor nodal minicomputer;

--integral multiprocessor complex based on minicomputers, with determination of the functions of a special computer;

--centralized multiprocessor minicomputer for use in control processes real time, or for demanding scientific-technical computations, and so on. The operational speed is expected to be two orders higher than the speed of existing minicomputers which have similar characteristics.

The fifth and last class of minicomputers of the SMEP series contains five basic types involving systems oriented for special purposes, including specialized processors.

They are as follows:

--system designed for application of algorithms for pattern identification (for example, conversational, visual pictures, and so on).

This applies basically to simple processors:

--specialized processor for processing of videographic information;

--parallel processor with high output and speed, designed in particular for dealing with programs in the dictionary of equivalents of nominal spheres, and so on. It is also appropriate for vector and matrix operations for the processing and identification of pictures of various types;

--communication processor, designed for computer communication networks, telecommunication exchanges, and so on.

The survey presented above shows the degree of importance of this sector of computer technology, but it also shows the need for broad international cooperation, well-coordinated cooperation in relation to the number of expected types of minicomputers and the future increase of new, progressive peripherals, (?)processing units, and interfaces of the entire SMEP. In terms of international cooperation in this area and its future prospects, the guarantee lies first of all in good coordination and control. That is the only way to make the outlined goals realistic.

This is indicated both by the results in the JSEP sector as well as by the first successful results of mutual cooperation in the SMEP sector. Experience has shown that the highly complex and technically demanding work is realistically outlined precisely in this collective international cooperation under Soviet leadership, and that the results are and in the future also will be a contribution to the Czechoslovak national economy.

In order to further improve mutual and effective cooperation, a multilateral agreement on specialization and cooperation is being prepared within the framework of the Intergovernmental Commission for the entire area of computers. This agreement will be the basis for a consistent division of labor among all the participating countries of the MVK.

It is necessary that Czechoslovakia also continue to create favorable conditions at all levels of management centers and production centers and be an effective member of the vanguard of the large international family for the entire area of computer engineering, the JSEP and SMEP, from research through development and production all the way to the application of the computers by Czechoslovak users.

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CSO: 2402

CZECHOSLOVAKIA

PROBLEMS RELATED TO TRANSFUSIONS TOPIC OF HEMATOLOGY SYMPOSIUM

Prague CASOPIS LEKARU CESKYCH in Czech No 40, 6 Oct 78, pp 1266-1267

[Text] According to the resolution of the board of Hematology Associates of Czechoslovakia, Poland and East Germany, there are to be held symposia regularly every two years, i.e., alternating the countries of participants. The first symposium of this kind was held in Czechoslovakia in Krusberk in 1976. This year the Polish Hematology Association had the task to organize the second trilateral symposium and it selected Polish spa Polanica in Kladske as the location of this meeting. About 150 participants were present at this meeting, of which about 25-30 participants were from Czechoslovakia and about the same number from East Germany. The discussions took place in three parallel sections with the following themes:

1. Acute leukemia. Within the frame of this theme, about 65 reports were delivered on--among others--immune resistance in cases of acute leukemia, on the function of granulocytes and macrophages, on the results of cytochemistry examinations and those done by electronic microscope of cases of acute leukemia, on CNS [central nervous system] disturbances in connection with this disease and the problems of chemotherapy and immunotherapy connected with acute leukemia.

2. Hemopexis. About 50 reports were presented on problems of laboratory techniques for hematological examinations, problems of blood platelets and of hemopexis in acute leukemia and the pathogenesis and treatment of thrombosis.

3. Blood transfusion. About 35 reports were delivered on this theme. This reporter spent two days attending this section because of his own specialization, which made it possible for him to report in a more detailed way on some of these more important lectures.

Gaczkowski and associates concentrated on changes in the ultrastructure of leukocytes preserved in plasma at 4°C. Examination by electronic microscope showed that the degenerative process starts after 48 hours of storage and that it concerns granulocytes; the ultrastructure of monocytes and lymphocytes did not change after 48 hours. The authors therefore conclude that the leokocytes in citrate plasma can be stored safely at 4°C for 24 hours.

Nowicki and associates studied the metabolism of erythrocytes of cadaver blood. A number of biochemical values was closely observed, i.e., (ATP, ADP, AMP, 23-DPA, plasma K,Na, inorganic phosphate, blood albumen). In cases of blood taken 4-6 hours after death and put into ACD conserving solution these biochemical values are identical up to the fourteen days of storage with the values of blood in ACD taken from normal blood donors.

With disagreement met the report of Witczak that slightly injured individuals or patients after surgery for hernia or acute or chronic appendicitis should be used as blood donors, even although the author mentioned that by taking blood from these individuals, there is not any disturbance of the healing process or lowering of physical fitness.

Fiala evaluated in a critical way the methods of leukocytolysis of the blood. None of the tested methods of removal of leukocytes from the stored blood gives such results that the transfused blood could be considered as absolutely non-immunogenic.

Brandstadter submitted a survey of blood production in the transfusion service of East Germany. The number of blood extractions in 1976 was 634,000; the use of erythrocyte masses increased by 45 percent; 33,000 litres of plasma were used for fractionation. Plasmapheresis is used for preparation of immunoglobins and of diagnostic serum.

Frick and associates examined in detail from the biochemical point of view the platelet functions in blood extracted into a CPD-solution enriched by adenine and guanosine. The conclusion based on the results is that from the point of view of hemostatic function of platelets it is possible to use platelets in CPD plasma stored for maximum of 3 days. Preusner arrived at similar conclusions when he examined the problems of kinetics and post-transfusion survival of plasma platelets stabilized in CPD-AG solution.

Lukasiak, from the Warsaw Hematology Institute, determined the activity of glutathione, methemoglobin reductase and the level of reduced glutathione and methemoglobin in ACD blood stored for 25 days at 4°C. The activity of the traced enzymes decreases parallel to an increase in the level of methemoglobin and a decrease in reduced glutathion.

Strauss reported on her experiences with rutin used in an ACD-AG preserving solution. So far 3 million blood transfusions have been performed using this solution (50 percent whole blood, 50 percent erythrocyte). Transfusions were made with blood stored for 21 days; with regard to high ATP values it is possible to expect higher post-transfusion survival (85-95 percent) of erythrocytes and better rheological characteristics of blood.

Hindorf described the method of preparation of cryoprecipitate for the use DEAE-Sephadex. The availability of the freshest possible plasma as a basic material remains an organizational problem.

Daszynski presented a survey of several years experience with the Haemonetics-30 centrifuge in clinics. Plasmapheresis using this machine was carried out in these instances: myelosis, thrombocytosis, visceral forms of lupus erythematosus and pemphigus, osteomyelosclerosis. In case of pehphigus (1000-1500 milliliters of blood extracted) the number of antibodies decreased. The extracted plasma was replaced by thawed plasma compatible in the ABO system minus AHG. From the plasma of patients sick with thrombocytosis thrombocytes, were separated frozen and applied to these patients, to whom hemorrhaging occurred during the cytostatic therapy.

In another report, Daszynski concentrated on thrombopheresis and leukopheresis with the Haemonetics-30 machine. Gaines by separation were as follows: 0,55 x 10^{11} thrombocytes,1,7 x 10^{9} leukocytes. If hydroxyetyl-starch was used during the separation process, then the increase of granulocytes was 2,5 times higher than in cases where dextran was used for preparation. The examination by electronic microscope showed that after separation (by Haemonetics-30), the isolated platelets continue to have normal structure, both the membranes and granules. Even lymphocytes after being isolated retained a normal cell membrane as well as nucleus structure.

D. Jerke (East Germany) concentrated on problems of post-transfusion jaundice. He coordinated a collective study, which examined 3 million blood extractions. Pathological values of SGPT appeared in 1 percent of the samples; the HBsAg was positive in 0,09 percent. In cases of 50 percent of the donors with increased SGPT values, biopsies established either liver steatosis or in 13 percent, inflammatory changes. In HBsAg positive persons, inflammatory changes of the liver were established in 45 percent, liver steatosis in only 14,5 percent.

R. Uhlig and associates followed the appearance of post-transfusion jaundice in 108 cases of open heart surgery using a heart-lung machine. Jaundice appeared in 4,6 percent. Prevention: decreased amount of blood used during surgery, during the post-operative care; examination of HBsAg donors.

Orlowski and associates took 120-400 milliliters of blood from 70 patients before surgery (gastrectomy, strumectomy). In return, they were given an infusion (hematocrit must not be below 30 percent). After that, the effects of hemodilution were observed from the biochemical and hemopexis standpoint. Values remained within physiological norms, the patients did not show changes in hemodynamics (i.e., microcirculation), in acid-base equilibrium, in metabolism of electrolytes and proteins, in hemostasis or liver functions.

The next round of reports concerned immunohematological problems. Drobna and associates opened the series of lectures on this theme. She traced occurrence of cytotoxic antibodies in patients that underwent single massive blood transfusion and 1) implantation of an artificial valve (incidence 26 percent), 2) transplant of an allogenic valve (57 percent cytotoxins), 3) transplant of venous alostep [as printed] (50 percent cytotoxins positive). Rare antigens on erythrocytes were examined by reports of Busova (Tu antigen), Dzierzkova (Cad antigen), Hrubisko (H-deficient erythrocytes). Dzierzkova and associates tried in their report to solve problems of familiar occurrence of polyglutinability and of parallel hematological disturbances (pancytopenia).

The report of Dobry and associates on cryo-preservation of bone marrow cells of mice aroused interest. It concerns a project solved in collaboration with Fedotenke (USSR); the finding on satisfactory life in the bone marrow cells still 12 hours after thawing as long as they preserved at 2°C-4°C are valuable.

Rennerova enriched (increased) ability to diagnose ABO hemolytic illnesses of newborn babies by the proof of high titre IgG anti A/B while using the separation technique with the help of the Sephadex A-50. Vesely compared the advantages and disadvantages of two automatic devices for identifying blood groups, i.e., BG-15 and G-360.

In summary, one can say that the individual sections contained a number of interesting details, however, the participants did not learn of any new discoveries. The reports by the Czechoslovak delegation were in general distinguished by very high quality.

Within the framework of this symposium was also arranged an exhibit by pharmaceutical firms (Poland, Hungary, East Germany) which called attention especially to some sort of cytostasis. The Kerandeta firm (East Germany) pulled a surprise with its exhibit of plastic transfusion and infusion material. The Dade firm (USA) exhibited an efficient automat for serial hemopexis examination. The Immuno firm (Austria) displayed a large number of immunological devices.

The exquisitely arranged social activities contributed to the satisfaction of the participants: a piano concert of Chopin's music at the Duszniky spa on the eve of symposium opening and a short car trip to Vamberice and Kudowa spa. These activities as well as the successful party at the end contributed to strengthening of mutual cordial relationships among the individual participants of the symposium. The discussions in hallways helped to clarify some common problems and to create some more precise plans by mutual cooperation.

I am therefore convinced that all participants look forward to the next trilateral hematology symposium, which will take place in 1980 in Chotebuz in East Germany.

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