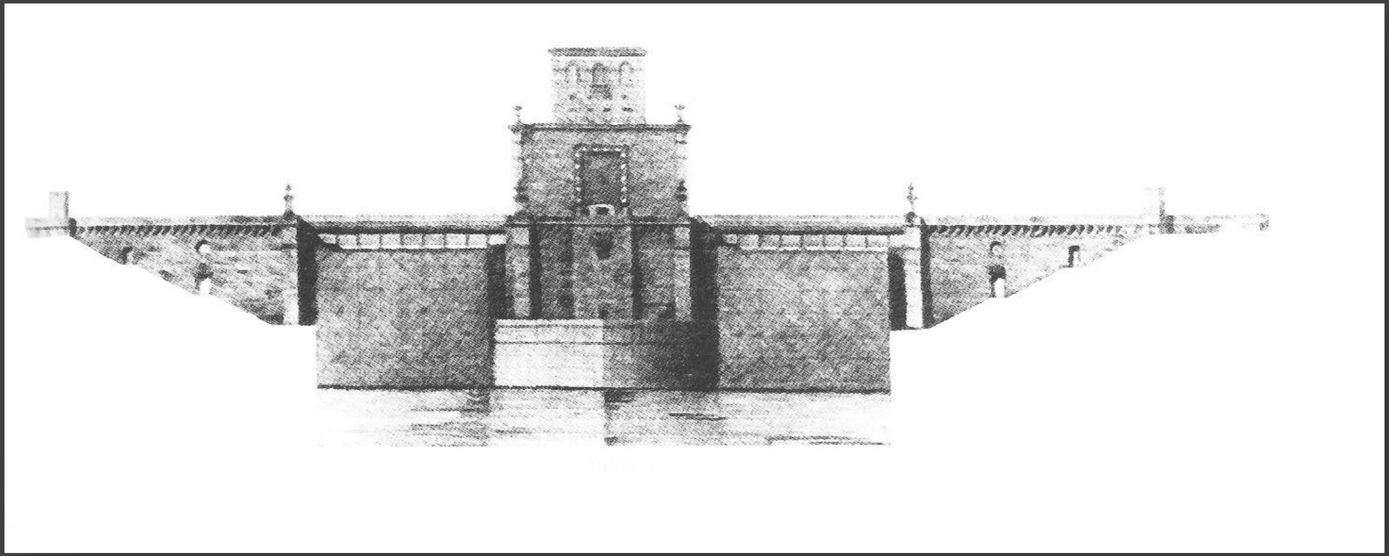
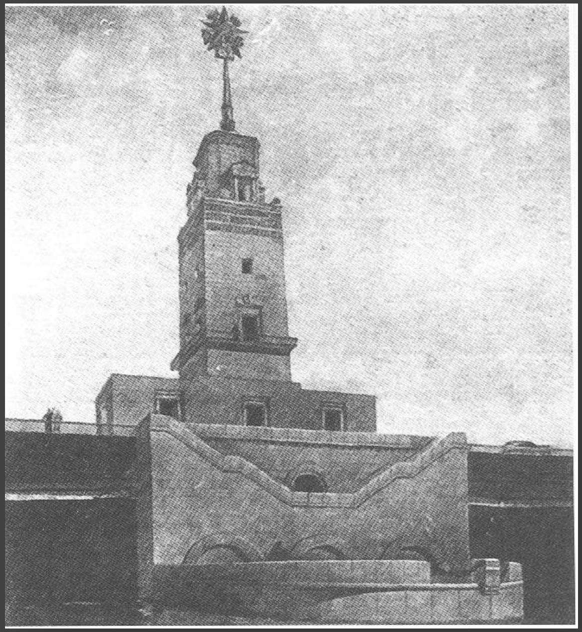
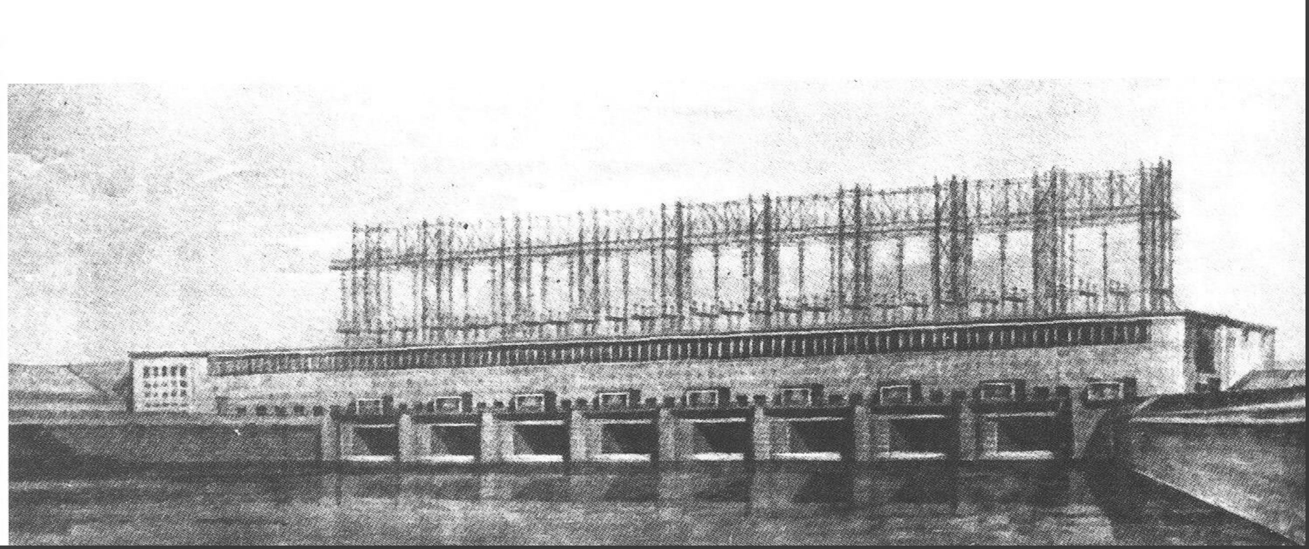
# Гидроэнергетик Николай Александрович Малышев



Здание управления Переволокской ГЭС на верхней голове шлюза. Проект 1940 г .

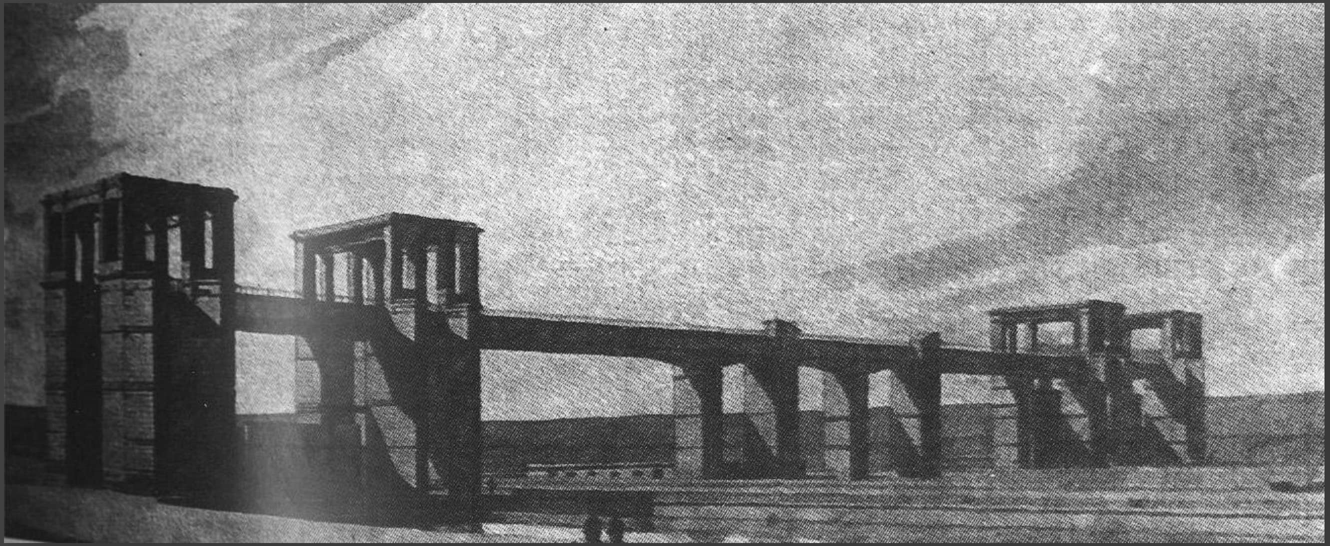


**Башня управления нижними шлюзами. Переволокская ГЭС. 1940 г.**



Вид Переволокской гидростанции с головы нижнего бьефа. 1940

Верхняя голова шлюза на Переволокской ГЭС.1940



**Малышев Николай Александрович (1911-2005) - советский специалист в области гидроэнергетики, водного хозяйства и гидротехнических сооружений, Герой Социалистического Труда. Доктор технических наук, член-корреспондент АН СССР (1976). Главный инженер проекта Куйбышевской ГЭС института «Гидропроект».**

6 декабря 2011 года исполнилось 100 лет со дня рождения Героя Социалистического Труда, лауреата Государственной премии, доктора технических наук, члена-корреспондента Академии наук СССР Николая Александровича Малышева. «Есть люди, имя которых как бы служит гарантией высокого качества выполняемого ими дела. Если проект сделан Н.А. Малышевым, можно не сомневаться: этот проект — высокого качества, отличается новизной и эффективностью принятых в нём решений». Так писали газеты в 1981 году в честь 70-летнего юбилея крупнейшего советского специалиста в области гидроэнергетики, водного хозяйства и гидротехнических сооружений Николая Александровича Малышева. Вся его трудовая деятельность была связана с гидроэнергетикой и «Гидропроектом». Сразу после окончания Ленинградского политехнического института Николай Малышев пришел на строительство Рыбинского гидроузла и вскоре возглавил проектный отдел. В 1948 году он возглавил проектирование Волго-Балтийского водного пути, затем стал главным инженером проекта крупнейшей ГЭС того времени – Куйбышевской (ныне - Жигулевской). Впервые столь крупное гидротехническое сооружение строилось на мягких грунтах, а здание ГЭС было совмещено с водосбросами. Следующий крупный проект Николая Малышева также стал новаторским. Асуанская ГЭС по решению международной ассоциации строителей вошла в десятку выдающихся сооружений 20 века.

Институт Гидропроект. Инженеры проектной группы Куйбышевской ГЭС под руководством Н.А.Малышева

Кроме того, Асуанская высотная плотина должна была стать залогом развития Египта, а значит, на советских проектировщиках лежала ответственность за благополучие жителей страны.

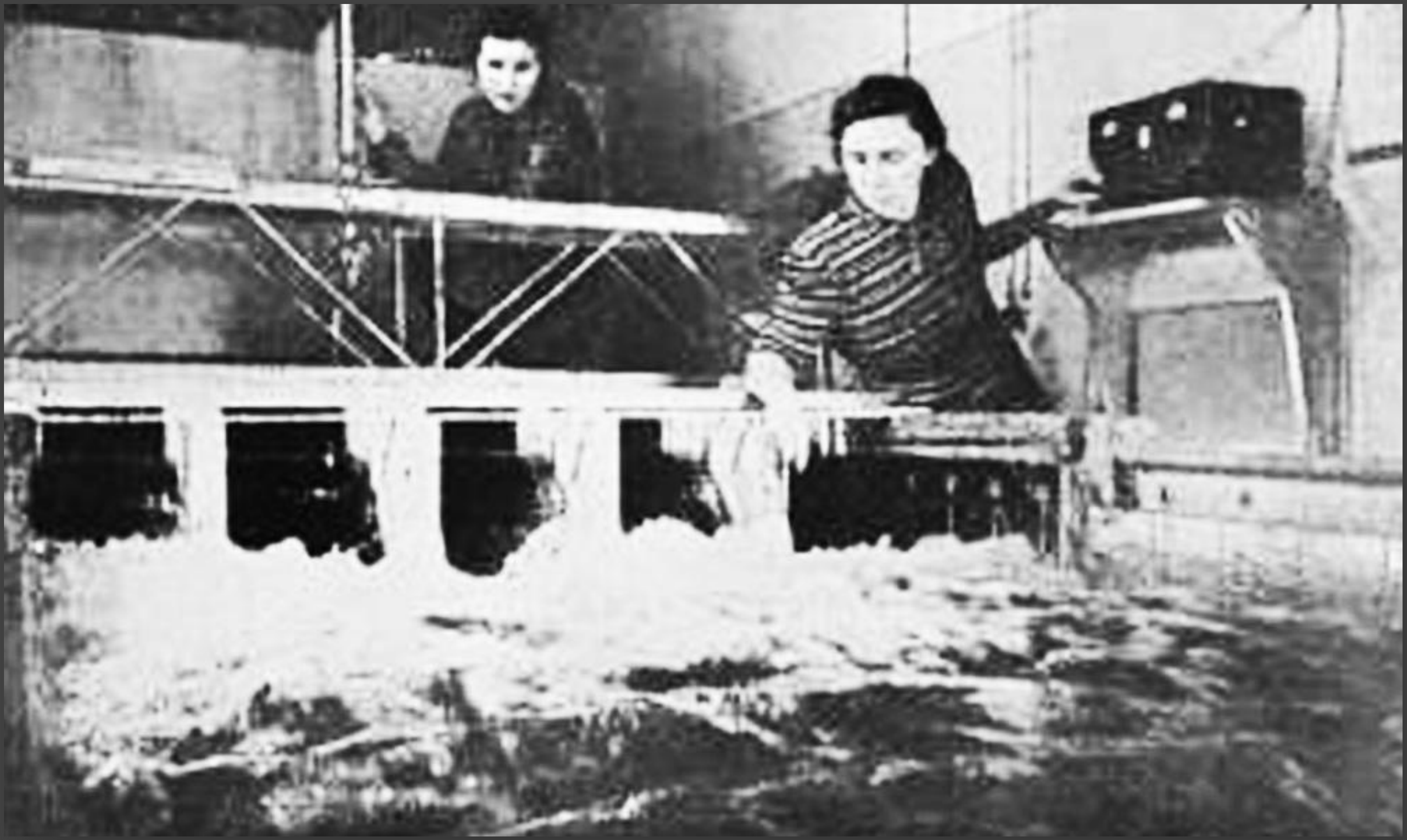
Надежды египтян на Асуанский гидроузел оправдались.

Когда в крайне маловодный период 1980-х годов в верхней части нильского бассейна погибли от голода тысячи людей, запас воды в Асуанском водохранилище оказался достаточным для орошения земель в Египте, который без потерь пережил период жесточайшей засухи. Предложенная Малышевым оригинальная компоновка гидроузла, где одно сооружение должно было сразу выполнять три функции — гидростанции, водосбросов и строительных туннелей, дала значительный выигрыш средств и времени.

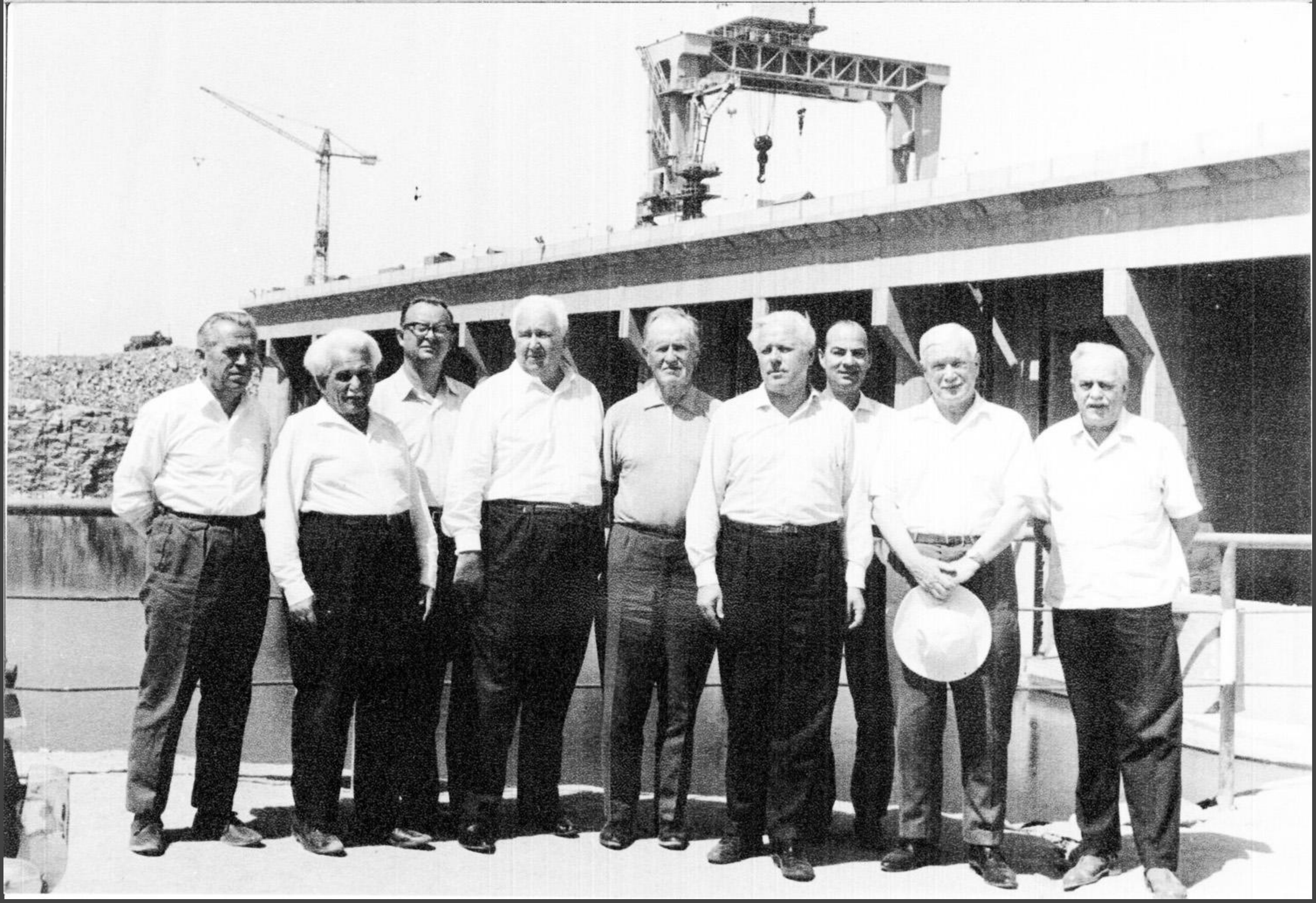
За проекты Высотной Асуанской плотины в Египте и Евфратского гидроузла в Сирии Николай Малышев был удостоен правительственных наград. В последующие годы Н.А.Малышев плотно «опекал» проектирование гидроузлов во Вьетнаме, Перу и Аргентине, передавая свой опыт молодым ГИПам. Помимо насыщенной проектной деятельности, Николай Малышев находил силы и время для научных разработок, участвовал в международных конгрессах, работал в Государственной комиссии Госплана СССР и других авторитетных организациях. В 1976 году он был избран членом-корреспондентом Академии наук СССР.

**Инженер Гидропроекта за разработкой чертежей будущей ГЭС**

**Главный инженер проекта Куйбышевской ГЭС Н.А. Малышев и главный инженер проекта Сталинградской ГЭС И.С.Харитонов**



Институт Гидропроект. Действующая модель пролетов плотины Куйбышевской ГЭС. Старший Инженер Л.Морозова (справа) и Лаборант Н. Киринова измеряют скорость течения воды



4-й слева Н.Разин, 6-й слева Н.Малышев на строительстве Асуанской ГЭС

Встреча Н..Хрущева и Н.Малышева с руководителями строительства Асуанской плотины

Н.А.Малышев с вьетнамскими гидростроителями

**3-й слева И.В. Комзин и 6-й слева Н.А.Малышев на строительстве Асуанской плотины**

Причал Куйбышевгидростроя. Разгрузка оборудования для Куйбышевской ГЭС

**Гидротурбинный завод им. Сталина Мастер сборки Г.А. Бугров, бригадир В.А.Ненастьев, сборщик Б.И.Попов обсуждают технологию сборки гидротурбины для Куйбышевской ГЭС.1952**


Завод «Электросила». Подготовка к отправке продукции для Куйбышевской ГЭС.1952

Сормовская землечерпалка, работавшая на подготовке ложа Куйбышевского водохранилища

Возведение здания Куйбышевского гидроузла. 1951

**Шлюза и шлюзовые камеры на Куйбышевской ГЭС**


Стахановцы-многостаночники завода «Подъемник» К.Акопов и Н. Коряпов у дуборезного станка исполняют заказ для КуГЭС

Установка металлических опор у горы Могутовой

Погрузка готовых лебедок на ташкентском заводе «Подъемник» для Куйбышевской ГЭС

Монтаж контакторных панелей автоматического управления шлюзами для КуГЭС на заводе «Динамо» имени Кирова

**Канатная дорога**

Стальная опора подвесной дороги в Жигулях

Шпунтовая стена протянулась до середины Волги

Здесь будет Куйбышевское море

Начало строительства.
Погрузочная эстакада

**Ширяевский и федоровский бетонные заводы Куйбышевгидростроя**

**Верховая перемычка. Забивка шпунтов**

**Забивка шпунтов паровыми копрами**

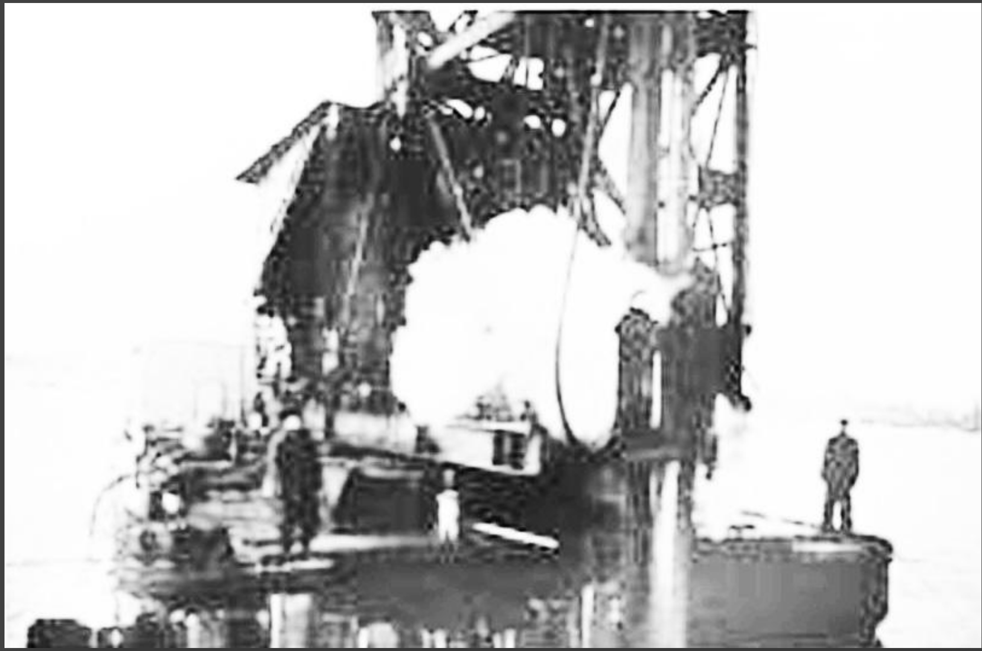
# Перекрытие Волги

Перекрытие Волги

Землечерпалка «Пятилетка» на верховой перемычке

Работа земснаряда по намывке земляной плотины

Командир передового экипажа земснаряда 320 Василий Аксенов

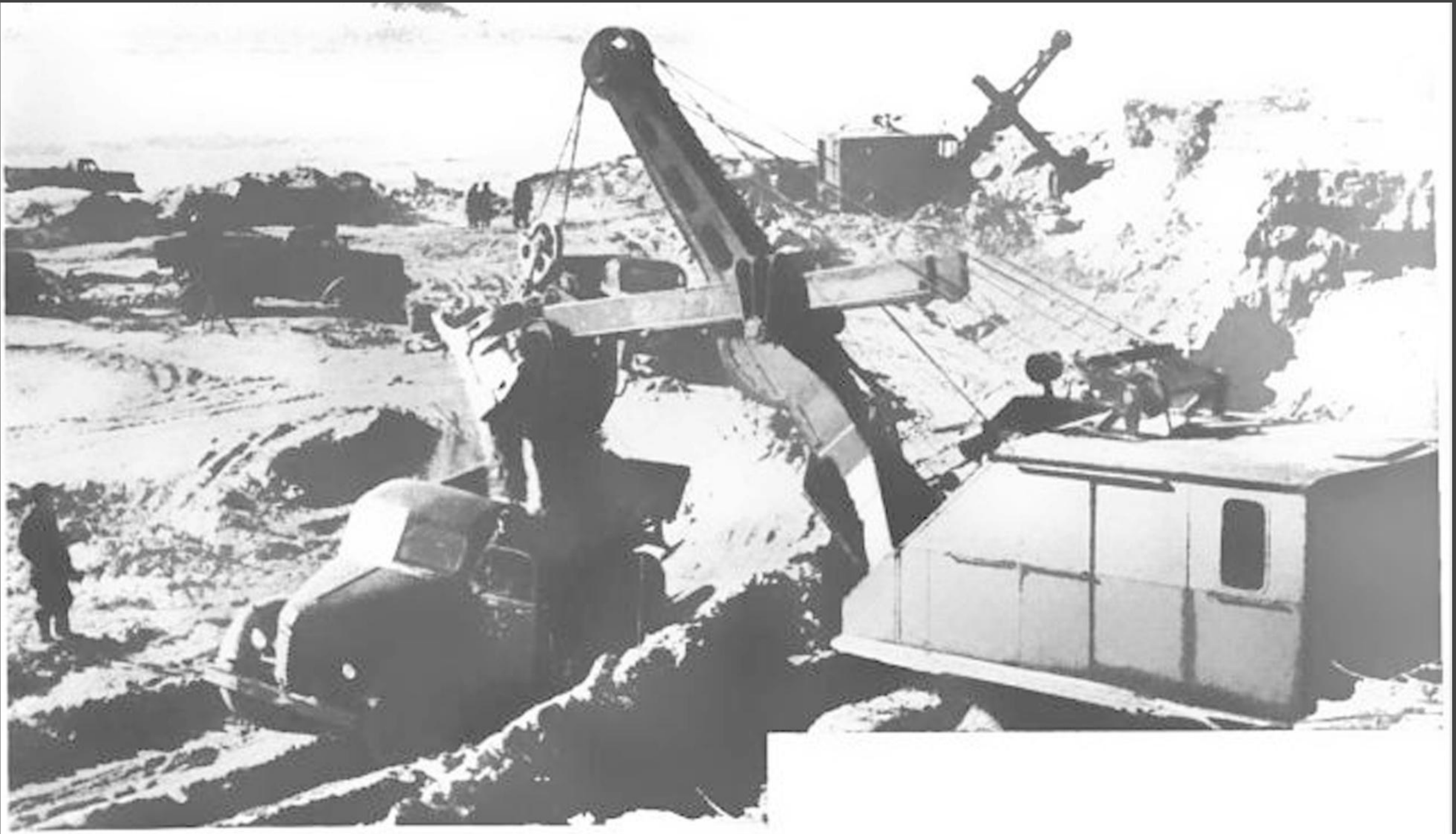


Копром забивают опору для канатной дороги

**Герой Социалистического труда экскаваторщик Василий Федорович Лямин**

**В.Ф. Лямин (второй слева) на 21 съезде КПСС. 1959**

Пульпопровод в Правобережном строительном районе



День и ночь экскаваторы грызут забойные стенки. Движения машин рассчитаны по секундам.

**Работа экскаваторных бригад**

**Шпунтовая стена через Волгу**

**2-й слева А.С. Мурысев, 3-й генерал И.П.Семенов,4-й И.В. Комзин, 6-й В.М.Молотов-Скрябин,2-й справа Н.А.Малышев. Август 1955**

BIBLIOGRAPHY

REVIEW OF THE BOOK "ORGANIZATION AND PLANNING OF HYDRAULIC CONSTRUCTION"*

N. A. Malyshev, L. I. Kudoyarov,
and I. S. Moiseev

An extremely interesting, useful book by a collection of authors on the organization and planning of hydraulic construction, which is a continuation of the monograph "The technology and organization of the construction of river hydraulic structures" has been made available.

The effect of many factors on the organization required for the construction of a
project are discussed at length in the book: the grouping of structures, the location c
hydroproject, the volumes and types of work to be performed, the presence of centraliz
duction bases, transportation plans, etc. The stages of construction are examined and
characteristic features of each stage are analyzed for hydroprojects built under diffe
natural climate conditions. The selection of various methods of work (economic and sub
ing methods) for construction efficiency is of interest. The effect of expanding work
preparatory period (the building of production bases and residential settlements) on th
gress of construction of basic structures is demonstrated. Considerable attention is
on the correctness of the planning and material-technical supply.

Of interest to designers is the section where technical and wage standardization c
struction processes and labor productivity and ways of increasing it, as well as the se
of time cards and their distribution among the crews are given.

A special section is devoted to the calender planning of construction, and analysi
the time required for construction on the whole, and for individual stages, as well as
fundamentals of network planning and weekly-daily operational planning. Individual sec
are devoted to the financing of construction, the principles of economic computation, a
technical control exercised over the quality of the construction. This treatise, which
first to collect and codify voluminous material on hydraulic construction, is required
by students attending hydraulic-enginggering institutes, but also by designers and buil

*Organization and Planning of Hydraulic Construction. Edited by Doctor of Technical Sc
Professor V. S. Éristov, Stroiizdat, Moscow (1977).

Translated from Gidrotekhnicheskoe Stroitel'stvo, No. 2, p. 60, February, 1979.

0018-8220/79/0002-0203$07.50 

ARTICLES

DETERMINATION OF THE BURNUP AND ISOTOPIC COMPOSITION OF VVÉR-440 SPENT FUEL

A. V. Stepanov, T. P. Makarova, B. A. Bibichev,
B. N. Belyaev, A. M. Fridkin, A. V. Lovtsyus,
L. D. Preobrazhenskaya, A. A. Lipovskii, G. A. Akopov,
G. A. Kulakov, V. D. Sidorenko, L. S. Bulyanitsa,
S. A. Nikitina, N. A. Malyshev, and M. A. Razuvaeva

UDC 621.039.524.4

In order to verify the accuracy of the calculation of the nuclide content of the actinide elements in VVÉR spent fuel and to improve the computational methods and programs, experimental data are essential about the burnup and conditions of irradiation. In [1, 2] experimental data are given about the content of U, Pu, Am, and Cm nuclides in samples of VVÉR-365 fuel elements, and the results are compared for experiment and calculation. In the present paper, similar experimental and calculated data are given for the spent fuel of the VVÉR-440 of the Novovoronezh nuclear power station.

The isotopic composition of the fuel in samples of fuel elements of length ~3 cm, cut-off from four fuel element assemblies of the VVÉR-440 with initial fuel enrichment of $c = 3.3$ and 3.6%, was investigated. Table 1 shows the numbers of the fuel elements from which the samples were cut-off, and the positions of the sectioned samples over the height of the fuel elements. The location of the fuel elements in the fuel element assemblies is shown in Fig. 1.

In order to study the effect of a change of neutron spectrum over the cross section of the fuel elements on the isotopic composition of the fuel, the samples were cut-off from fuel elements of the outer series (fuel elements 58, 25), from fuel elements located near the central tube (fuel elements 63, 64), and from fuel elements of the intermediate region (region with an asymptotic neutron spectrum, fuel elements 97 and 107). Samples of fuel elements 1-7 were cut-off from fuel-element assemblies RP-3.3 No. 71A (block III), 8 and 9 from fuel element assemblies RP-3.3 No. 77A (block III), 10-20 from fuel-element assemblies R-3.6 No. 213 (block IV), and sample 25 from fuel-element assembly R-3.6 No. 216 (block IV); fuel element RP-3.3 No. 71A was irradiated during a single run; RP-3.3, No. 77A for five runs; R-3.6 No. 213 and R-3.6 No. 216 for three runs. The average fuel burnup in the fuel-element assemblies amounted to 16, 49, 31, and 33 kg/ton U, respectively.

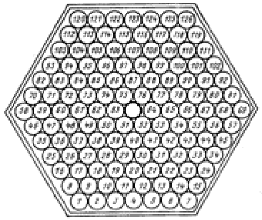
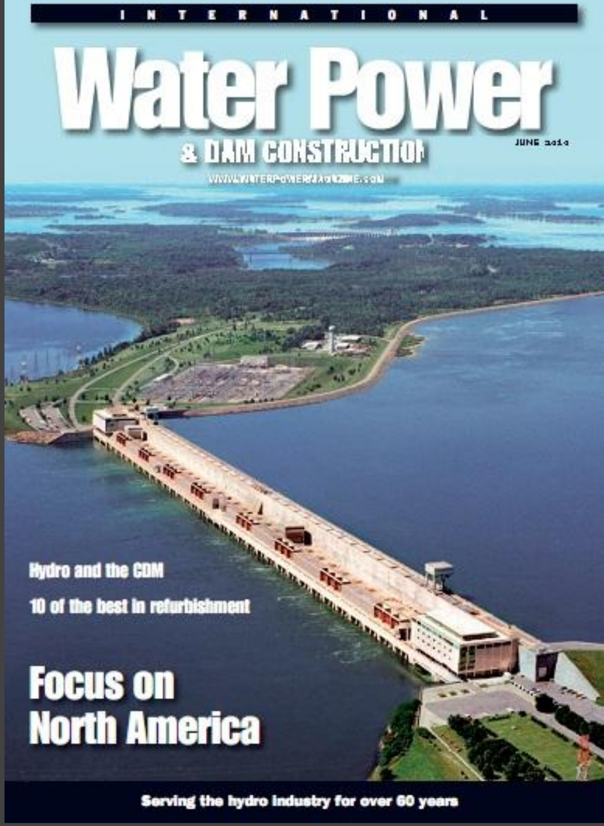


Fig. 1. Recorder chart of the location of the fuel elements in the fuel-element assemblies investigated.

Translated from Atomnaya Énergiya, Vol. 55, No. 3, pp. 141-145, September, 1983. Original article submitted November 22, 1982.

0038-531X/83/5503-0565$07.50  

Труды Н.А.Малышева




Журнал «Гидротехническое строительство»

MAJOR VICTORY OF ARAB AND SOVIET HYDROBUILDERS

A. P. Aleksandrov, N. A. Malyshev,
and K. I. Smirnov

UDC 621.311.21.004.11(282.263.1)

On January 15, 1971, the Aswan hydropower complex was completely put into operation. T
Presidium of the Supreme Soviet of the USSR, N. V. Podgornyi, and the President of the United Ar
dar, signed in the name of the Soviet Union and of the United Arab Republic the declaration on p
tion the Aswan High Dam, the hydroelectric station, and the electrical transmission lines.*

Through the efforts of Egyptian and Soviet workers and specialists, one of the largest dams i
erected, and the construction of the unique hydropower complex on the Nile River was completed.

The Aswan High rock-earth dam, 111 m high at the streambed and 3830 m long at the crest
tures of the hydrocenter, involved 14 million $m^3$ of excavation in rock, 43 million $m^3$ of fill (rock
and 1.3 million $m^3$ of reinforced concrete. The largest reservoir in the world, Nasser Lake, with a
164 $km^3$ and an available volume of 132 $km^3$ was created. It provides long-term regulation of the

The threats of inundations during floods and of calamities from droughts in dry years were e
1964 by construction of the dam. In 1967 (analogous to 1914 when Egypt suffered a disaster that r
catastrophically small runoff), the agriculture of the country was provided with a normal water su
reservoir. Eight hundred thousand hectares of desert are being converted into fertile land. Basin i
replaced by year-round irrigation on 400,000 ha of crop land, which will make it possible to harve
year. The hydroelectric station, with a total capacity of 2100 MW in 12 generating units operatin

*This declaration appears in this issue (p. 304) – Editorial Board.

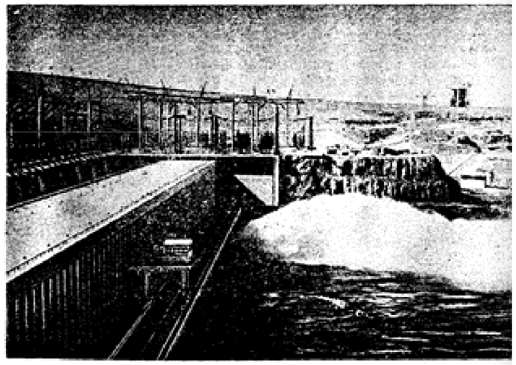


Fig. 1

Translated from Gidrotekhnicheskoe Stroitel'stvo, No. 4, pp. 4-9, April, 1971.



BIBLIOGRAPHY

"HYDRAULIC EARTH STRUCTURES, THEORETICAL
PRINCIPLES OF CALCULATION"*

Reviewed by N. A. Malyshev

Many embankment dams are presently being constructed in the USSR. The height of t
Such structures are most essential. Therefore, a handbook based on scientific achievements
great value to engineers engaged in the planning of rock-fill and earth dams.

At the end of 1967 the technical literature was enriched by a valuable book on this sub
"Énergiya" Publishing House, titled "Hydraulic Earth Structures [Theoretical Principles of C
Doctor of Technical Sciences R. R. Chugaev.

The book consists of two parts. The first part, consisting of five chapters, presents the
taking into account seepage forces and calculating the seepage strength of earth structures, a
lations of earth dams. Of great interest here is the author's disclosure of the physical essence
methods of taking them into account in theoretical and practical calculations; elucidation o
capillary rise of water in soils, the problem of seepage deformations of soil, and explanation
duced concepts of "normal" and "casual" strengths of earth structures and methods of calcula
developed by the author. This part of the book also presents extensive material on Soviet an

The second part of the book, also consisting of five chapters, presents the author's meth
stability of earth slopes and an analysis of various factors affecting their stability. Here the
itial premises which he used when developing a theory of limit equilibrium of a model of a
tion. Of great interest is the author's interpretation of the problem of safety factor of slope s
of a thorough and well-founded analysis of the results of calculating earth slopes by different
rational methods of calculation are established, particularly the author's "weight pressure" a
methods, which were adopted in the standard document on the USSR Ministry of Power and E
tions on the Calculation of the Stability of Earth Structures." This part of the book describes
of accounting for seepage and seismic forces and soil inhomogeneity when calculating slopes
practical instructions, including graphs for the calculation of slope stability.

The book as a whole encompasses a wide range of problems from the area of calculati
It does not include, however, the author's interpretation of such important problems as those
liquefaction of soil. Here one should agree with the author when he notes that these major,
are the subject of special investigations.

Truly regretful, in our opinion, is the use of unsuitable names which the author gives t
concepts and methods of calculation: "Casual filtration strength," "weight-pressure method,
physical essence of phenomena, these names do not evoke appropriate associations with the c
tomary for the hydraulic engineer. Surely, this explains why the technical specifications ar
to the terms "casual" (random) and "normal" seepage strength, their counterpart terms "gen
strengths. However, this does not lessen the value of Professor R. R. Chugaev's book.

The book is written clearly and to the point. It contains many concrete and quite use
It seems to us that it will be useful for engineers engaged in the planning of hydraulic struct
by the fact that many of the author's proposals elucidated in the book have already found re
standard documents.

*Énergiya, 1967.

Translated from Gidrotekhnicheskoe Stroitel'stvo, No. 6, pp. 59-60, June, 1969.



NATURE CONSERVATION

WAYS TO MAKE FOREST FELLING AND CLEANING PROFITABLE WHEN CREATING RESERVOIRS

N. A. Malyshev and B. M. Shkundin

UDC 627.884

Among the works related to the construction of river hydro developments, a special place is occupied by preparation of the flooded zone, particularly forest felling and cleaning.

Practice in the planning and conduction of such works shows that, as a rule, they are unprofitable and their performance on large reservoirs by traditional methods leads to considerable losses attributable to the estimates of the hydro developments.

We will give the main indices characterizing the problem of forest felling and cleaning defined in the feasibility study made by the State Institute for Planning Timber Rafting Enterprises and Timber Transport Ways (Giprolestrans) for three large hydroelectric stations (Table 1).

The additional expenditures included in the estimate of the hydrostation are a consequence of felling and cleaning the forest in the absence of transport lines, labor resources available in the region for processing the wood, temporary character of the work, difficult climatic conditions, etc. Furthermore, unfortunately, the equipment and technology do not allow felling a forest on steep slopes and in a number of other places.

In the 1950s, when drafting the technical and economic feasibility report on the commercial use of the forest resources in the zone of the planned reservoir of the Lower Ob hydrostation, it was proved that felling requires a subsidy due to the estimate for constructing the hydrostation amounting to about 130 million rubles (in terms of the present).

Understanding the unconditional hopelessness of felling the forest in reservoir zones without loss by traditional methods, the authors of this article came up with the suggestion to divide the problem of felling and cleaning the forest in the flooded zone into two stages: in zones where this work *can be* performed on principles of the total aggregate by known methods and mechanisms; felling of the forest in zones where this work on principles of self-repayment *cannot be* performed by the known methods and mechanisms.

Self-repayment in the second stage can be achieved only by creating a fundamentally new technology and mechanisms realizing forest felling.

One of the decisive factors making felling in the reservoir zone unprofitable is the lack of time before the start of flooding. In connection with this, the idea arose of creating equipment which would make it possible to continue works even after the start of filling the reservoir, i.e., creating special floating combines felling with a saw or pulling out the trees and processing it into a transportable product.

The stability, power, and strength of the combines should provide their operation under complex conditions of a submerged forest, including operation at the start of freezup. Apparently, it is expedient to supply such combines from power plants burning wood chips or other lumber wastes.

The All-Union Planning, Surveying, Scientific-Research Institute (Gidroproekt) launched work on the creation of fundamentally new equipment, which should meet the requirements: possibility of felling during filling of the reservoir, sometimes even subordinating the filling process to the conditions of felling by floating combines; conversion of the wood being felled into a transportable product having prospects of a market for a long time in considerable volumes; maximum reduction of wood losses in the form of felling wastes; provision of self-containment, allowing operation of the combine in remote, uninhabited regions.

The design of a floating lumbering combine [1] was developed in conformity with these requirements. When developing the lumbering combine the problem of the efficient combination and use of standard equipment, kinematic principles, control and actuating elements, synchronizing devices, checking instruments, and automatic devices from those already realized and verified in other areas was solved.

Translated from Gidrotekhnicheskoe Stroitel'stvo, No. 4, pp. 42-44, April, 1988.

0018-8220/88/2204-0249$12.50  

**Труды Н.А.Малышева**

**Могила Н.А.Малышева на Троекуровском кладбище**