

Miljenko Smokvina dipl. ek.

# Razvoj amaterske raketne tehnike u Rijeci

u povodu 50 obljetnice prvog leta čovjeka u svemir  
i u povodu 50 obljetnice lansiranja prvih amaterskih raketa u  
Hrvatskoj

Rijeka, 2011.



## Rijeka

Satelit

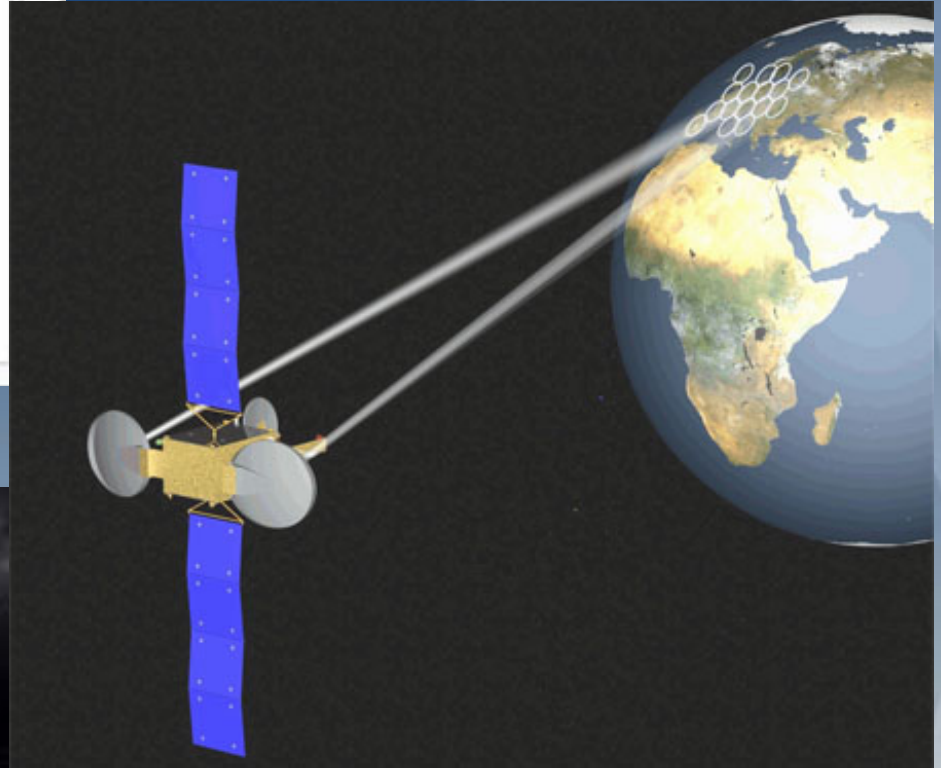
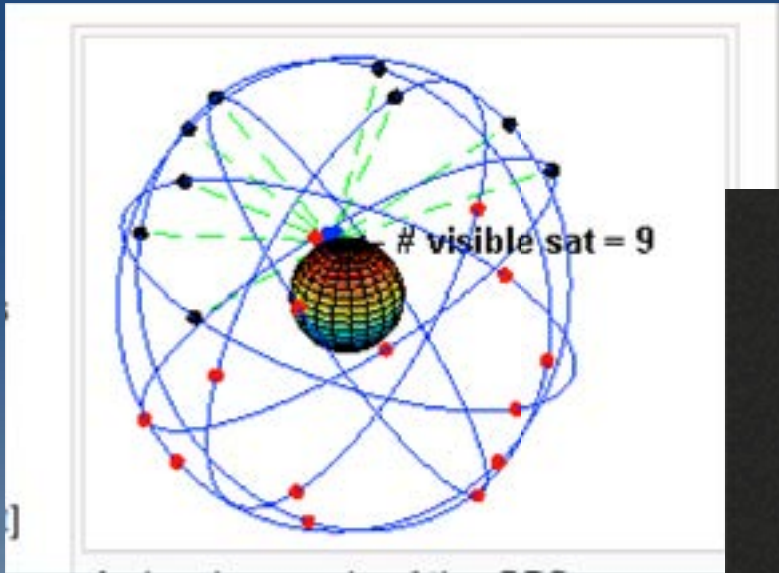


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Sri 05:00  
Sri 08:00  
Sri 11:00  
Sri 14:00  
Sri 17:00  
Sri 20:00  
Sri 23:00  
Čet 02:00  
Čet 05:00  
Čet 08:00  
Čet 11:00



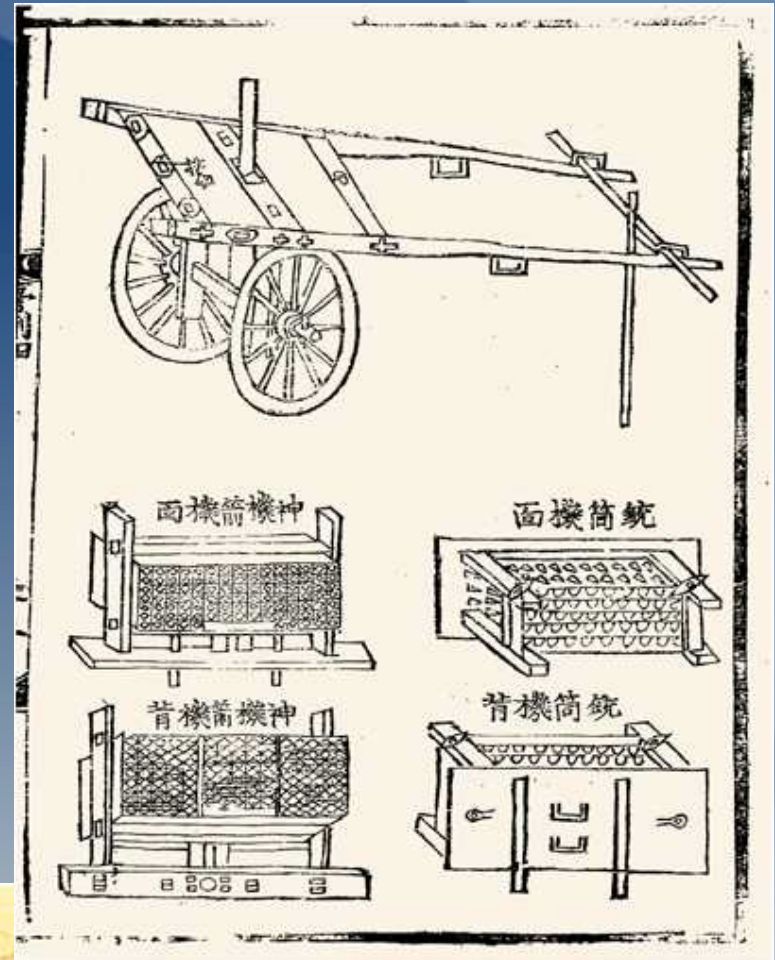
FORECA







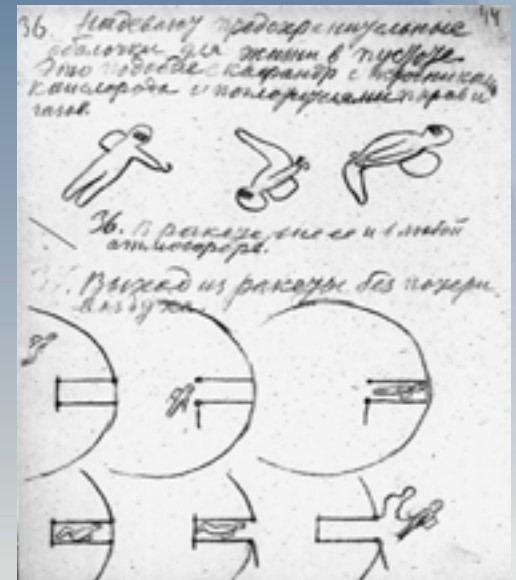
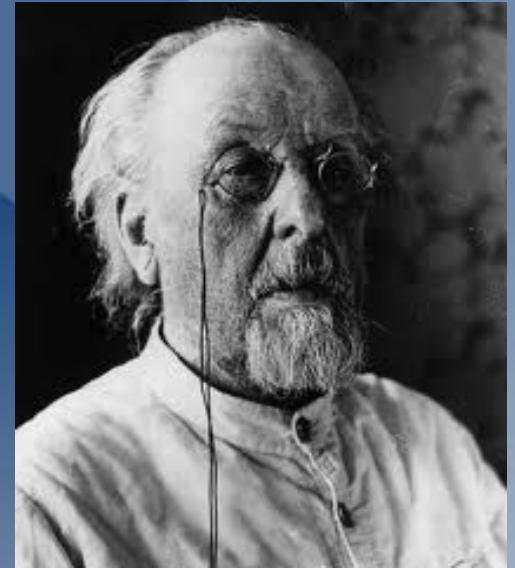
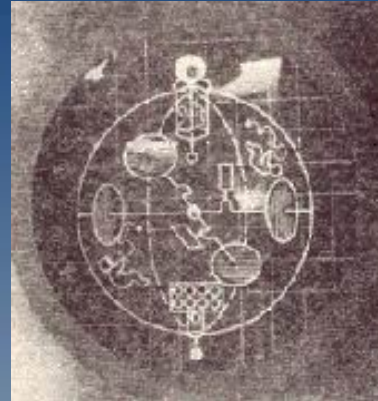
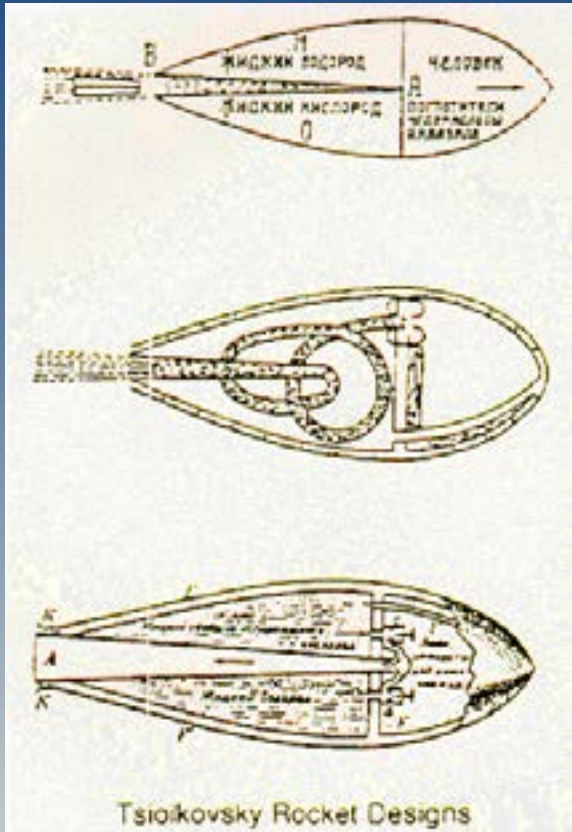
# Prve rakete u Kini



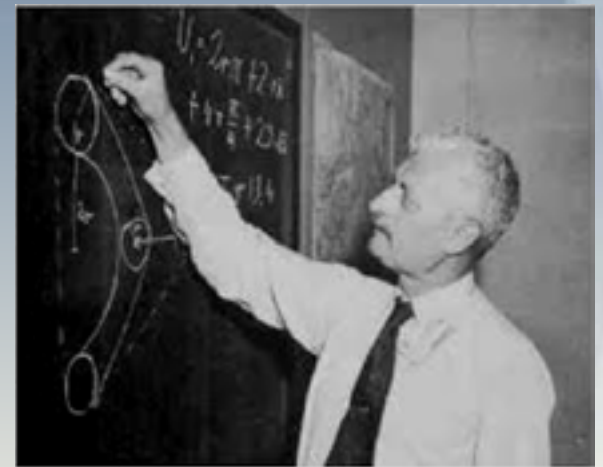
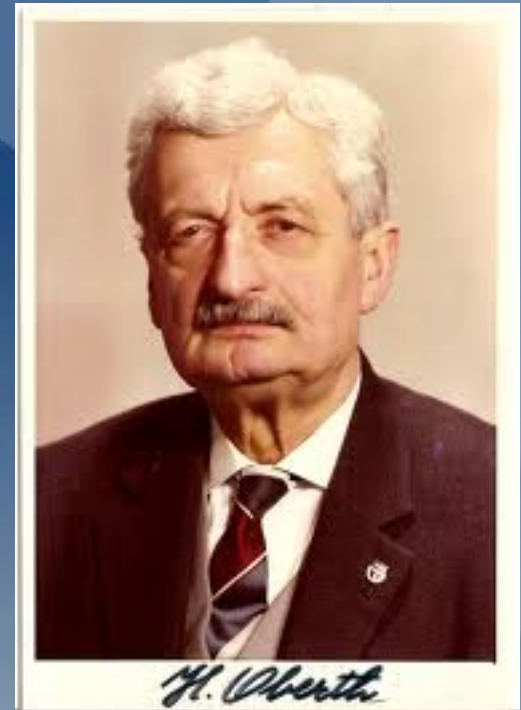
Treći Newtonov  
zakon akcije i  
reakcije



# Konstantin Ciolkovski, -



# Hermann Oberth, 1894 - 1989

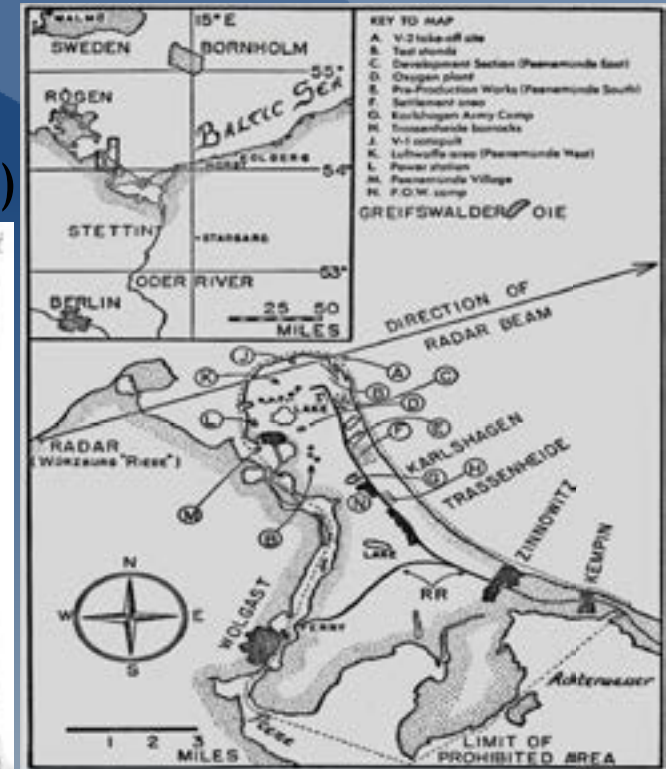
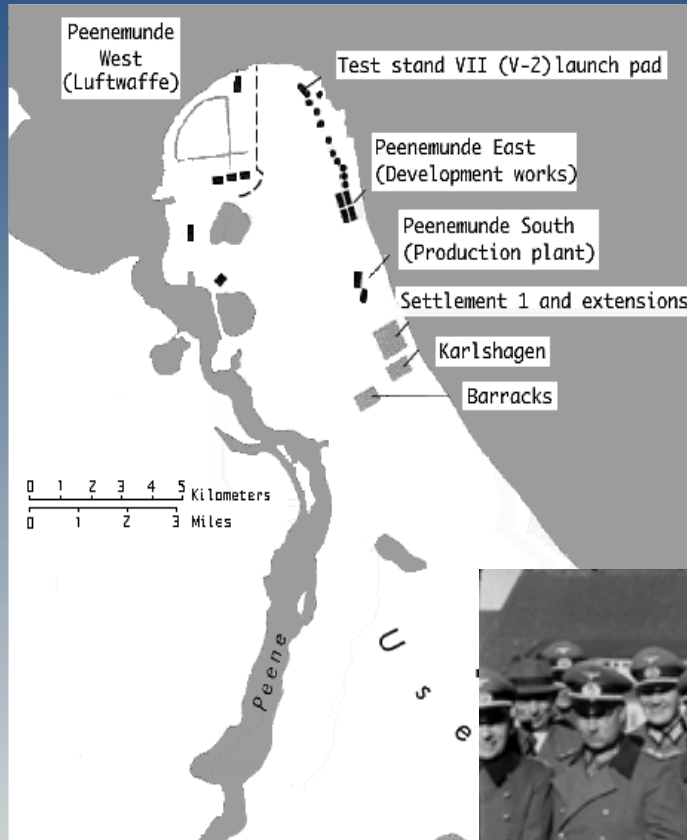


# Robert Goddard, 1882 - 1945

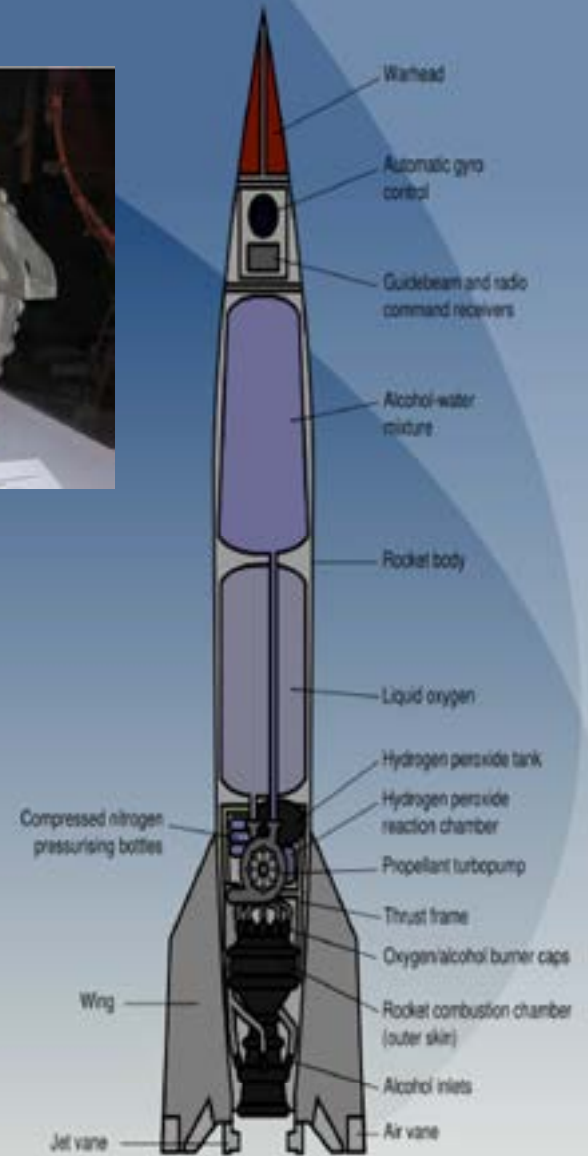
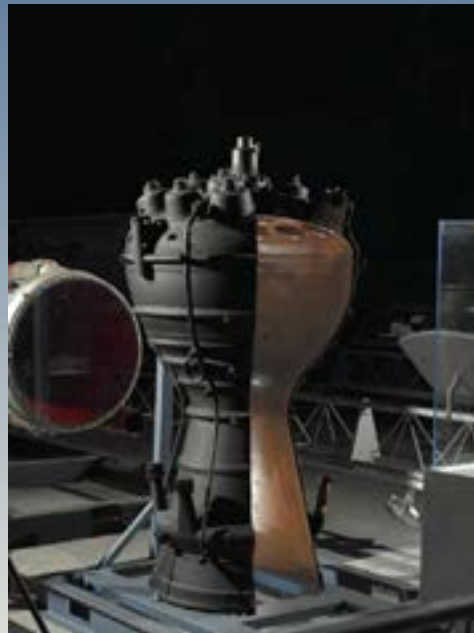
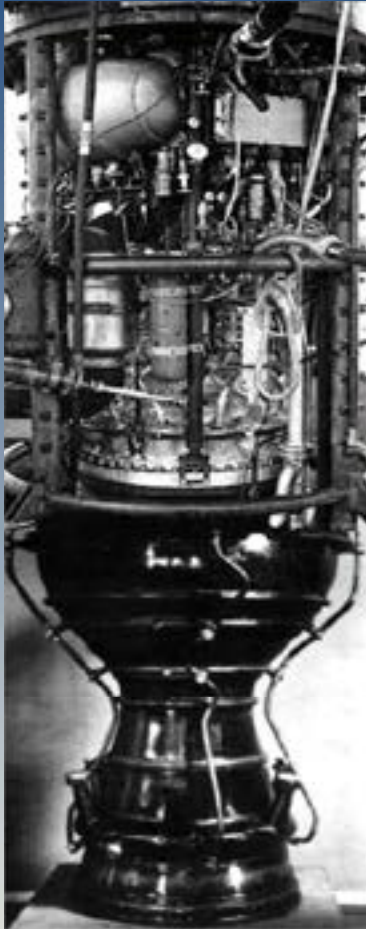




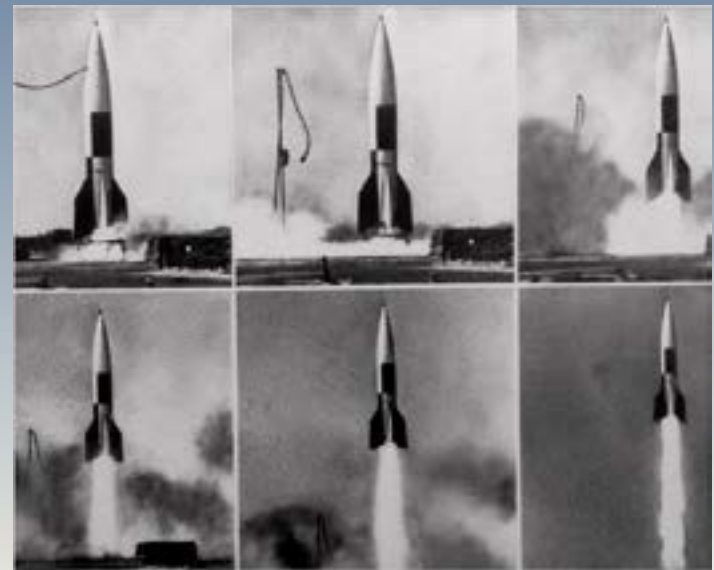
# Wernher von Braun, 1912 - 1977 razvoj raketa u Njemačkoj (Peenemunde)



# Raketa A4 (V2)



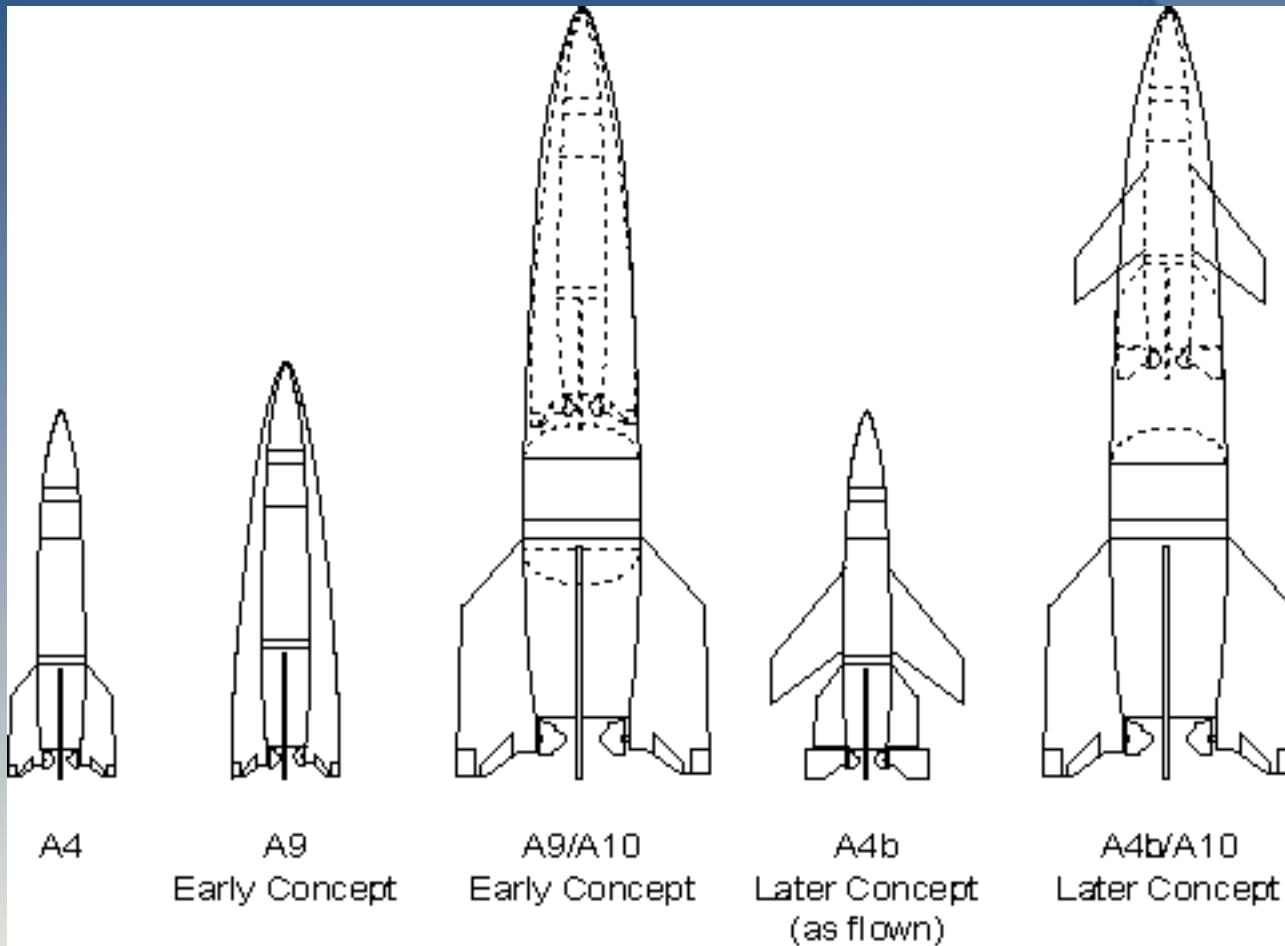
# Ispitivanje rakete A4



# Proizvodnja rakete A4



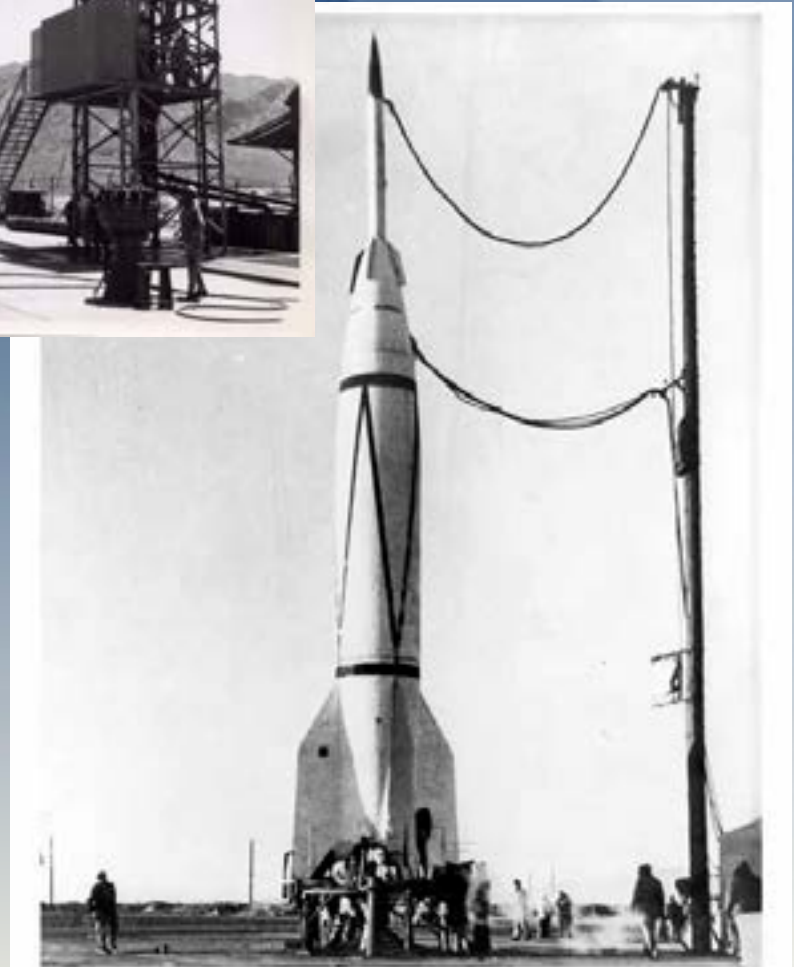
# Planovi za razvoj rakete A4



# Njemački raketni stručnjaci u SAD

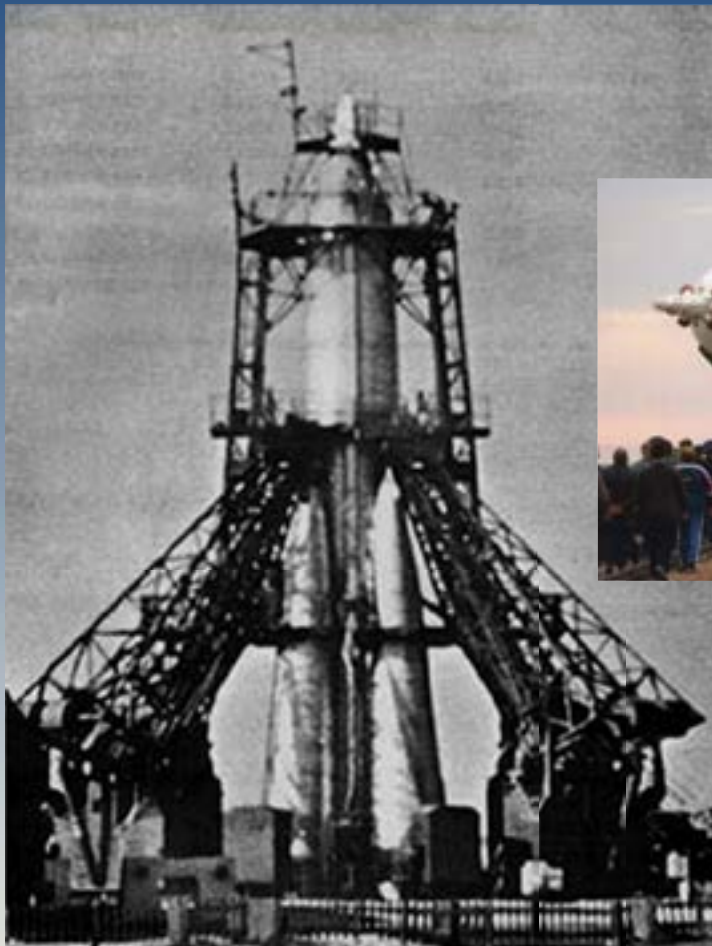


# White Sands poligon za ispitivanje raketa u SAD





# Sputnik prvi zemljin umjetni satelit



# Prvi sateliti u SAD, Vanguard i Explorer



# Prvi let čovjeka u svemir Jurija Gagarina



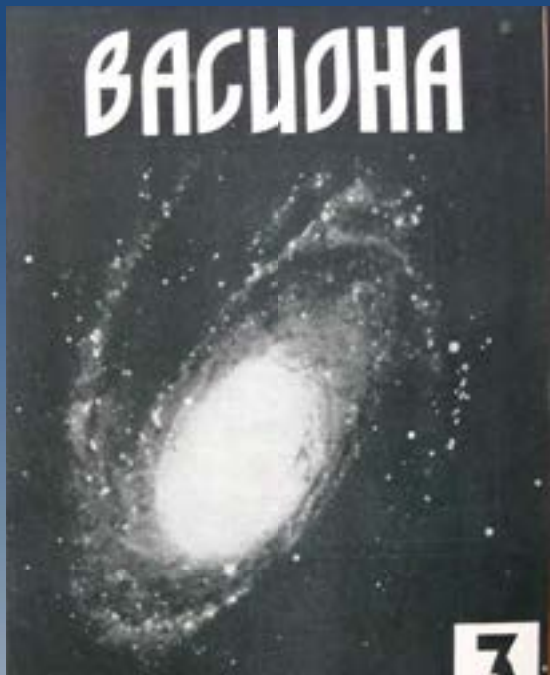
# Wernher von Braun i osvajanje svemira u SAD



Poticaji da se povijest  
riječkih raketaša prezentira  
javnosti



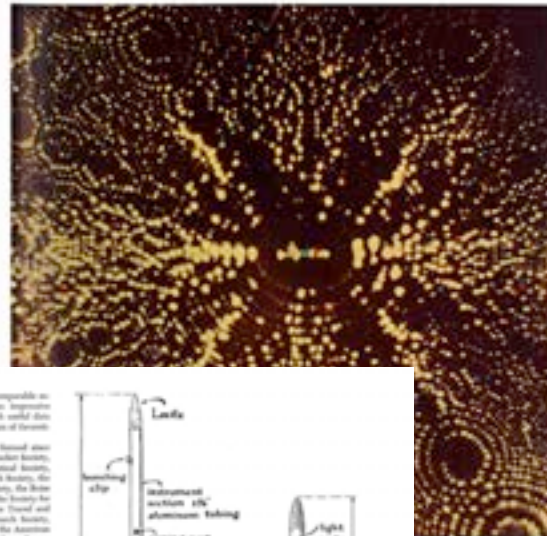
# Literatura riječkih raketaša



3  
1957



# SCIENTIFIC AMERICAN



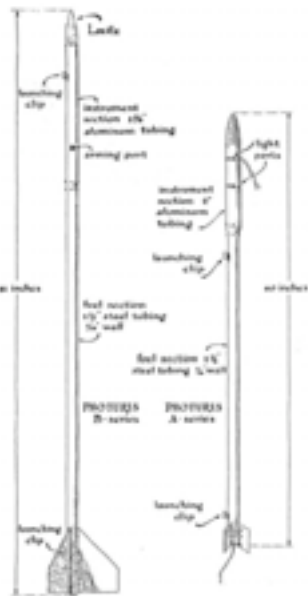
100 YEARS  
June 1957

group from undertaking comparable experiments. Scientists on remote world have been out of its progress of development.

"Representative groups based since 1955 include the Pacific Rocket Society, the Philadelphia Astronomical Society, the W. J. Kerck Research Society, the International Rocket Society, the New York Rocket Society, the Society for the Advancement of Space Travel and the American Rocket Research Society. All are affiliated with the American Astronomical Federation, itself in a national organization to collect and disseminate information and to promote space flight. Numerous other groups are now in existence and it is hoped that a complete roster of rocket societies can soon be compiled." (They actually formed groups only toward the end of the 1950s for the time.)

"Rocket societies are a variety of activities based on the excitement for their first flight of the rocket. The design and construction of the vehicle, its launching apparatus and instruments, the use of many launching problems. The rocket must be mathematically stable both before and after launch, the possibility of stability can be checked in many ways and various methods design and test. The design of small rockets and special properties can challenge a mathematical knowledge of mathematics, physics and chemistry. Because of space limitations the construction of small rockets will be great progress, it should speed in rocket creation, particularly those interested in construction. Rockets, however, photographs often had a steady-state solution in rocket creation because systems are made of vehicles, light parts, some materials used and the apparatus for and after being. Being a member of a team that contributes to many fields of interest in carrying a program through to the point of being a rocket with a representative group can be a feeling of pride in accomplishment with few words.

"Members of amateur rocket societies have an illusion that less space flight will be achieved through their efforts. They have neither the funds nor access to the necessary materials, but they can acquire that-kind information concerning the nature of the problems and existing solutions. By exchanging information and conducting certain types of experiments together can learn the basic facts of rocket flight. Finally, such an enthusiasm can help other people



Rocket with optical and electronic instruments built by the group

# Prve rakete u Rijeci



16. 4. 1939. Martinićeva  
Prva iznajmljiva raketa A-1 je  
postala se iznajmljiva A-1, koja nema samo  
jedan barut, a nekoliko različitih komponenti  
Dukane. Nakon iznajmljiva barutnih i drugi  
ovakvi barut se većina je raketa iznajmljiva  
na suhi. Raketa se nije ni pokušala se  
biti postati. U drugom iznajmljiva postala  
je. Upravo barut se pokušao. ~~Upravo~~  
Ovakvi nakon iznajmljiva postala raketa  
je eksplozivna. Raketa nije se pokušala  
i jedini ovakvi odletio je u stranu  
20 m u stranu, dok je raketa pala na  
samo postala. Ovakvi se bile postane  
deformirana, a raketa je dio raketa  
u kritička se postao oborožena. U  
raketa je ostala je iznajmljiva ovakvi

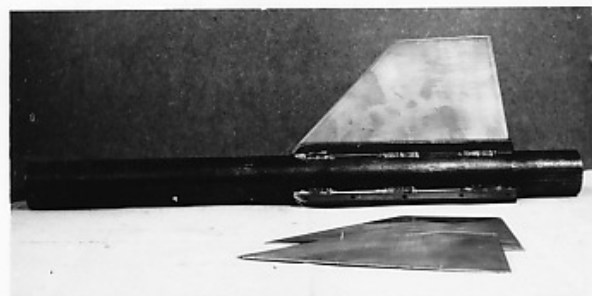
## Aeroklub "Kрила Kvarnera" u Rijeci i rad Astronautičke sekcije



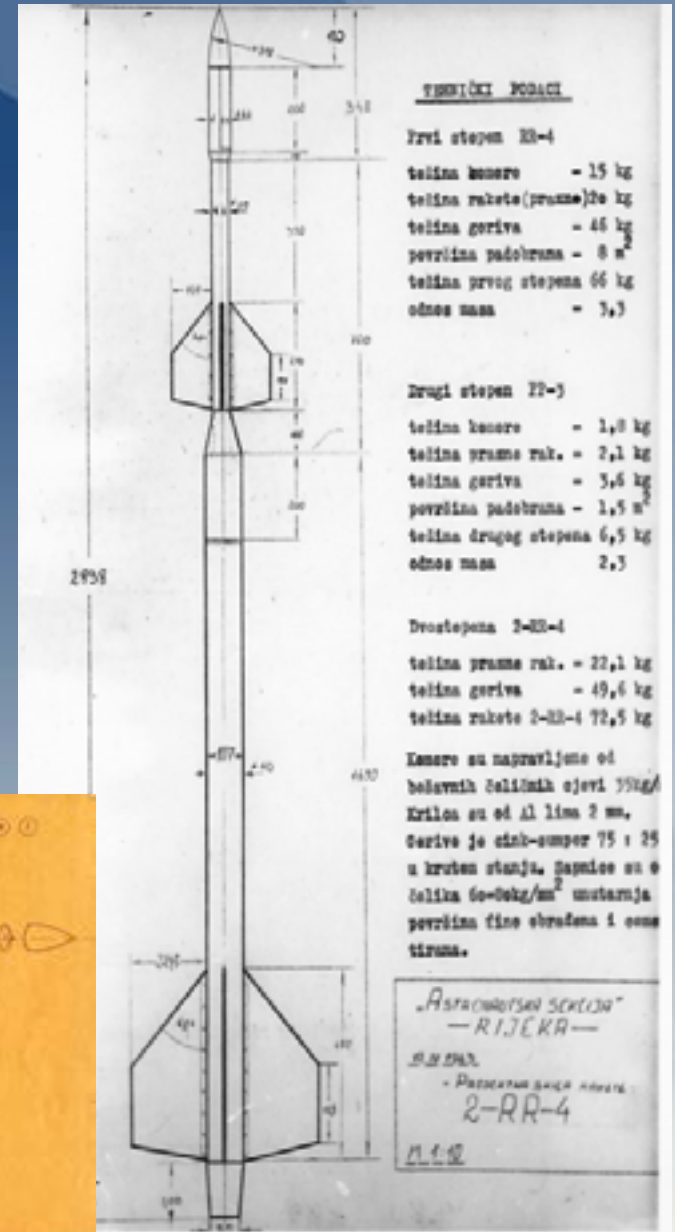
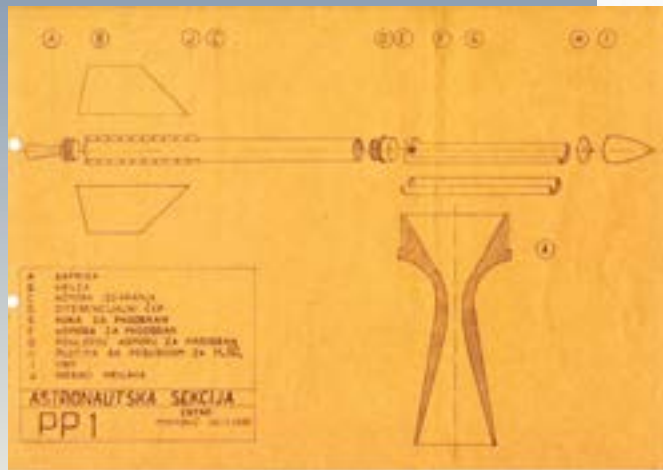
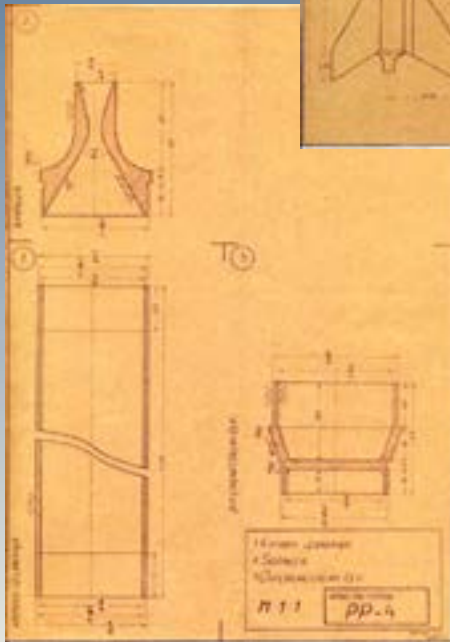
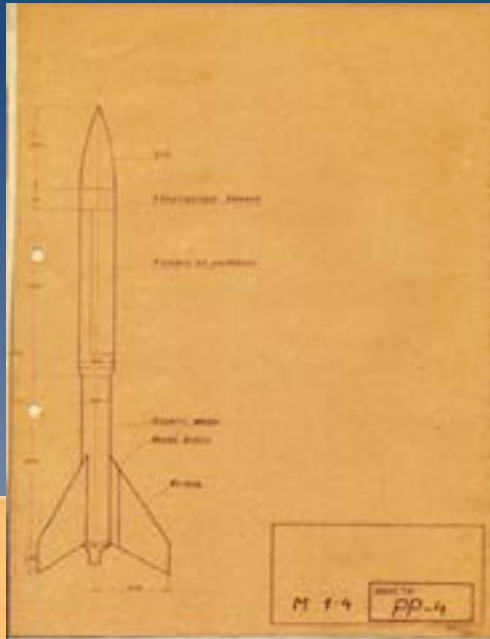
**3130**

„Školjić“, zanatska radna organizacija za izradu i montažu opreme tehničkih plinova, Žrtava fašizma 2/II, telefon 22-508, brzojav Školjić, ž. r-n 33800-601-1471.

# Dijelovi amaterske rakete



# Nacrti raketa riječkih raketnih amatera



# Prva statička ispitivanje raketnog motora na Grčevu



# Prva lansiranja raketa na Grobničkom polju



# Odlazak na lansiranje raketa na Grobničko polje



# Statičko ispitivanje raketa i raketnog goriva (cinka u prahu i sumpora)

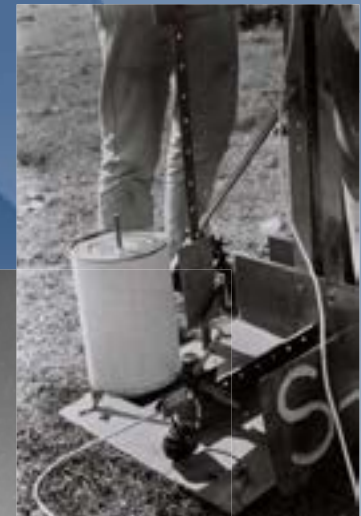


Priprema ljevanog  
(krutog) raketnog goriva,  
cinka u prahu i sumpora





# Statičko ispitivanje raketnih motora na Grobničkom polju



# Statički pokusi s raketnim motorima



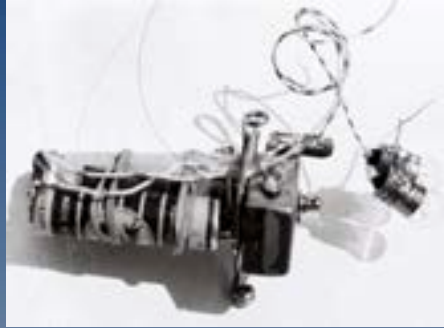
# Pripreme za lansiranje raketa



# Lansiranja raketa



# Spuštanje rakete na zemlju uz pomoć padobrana

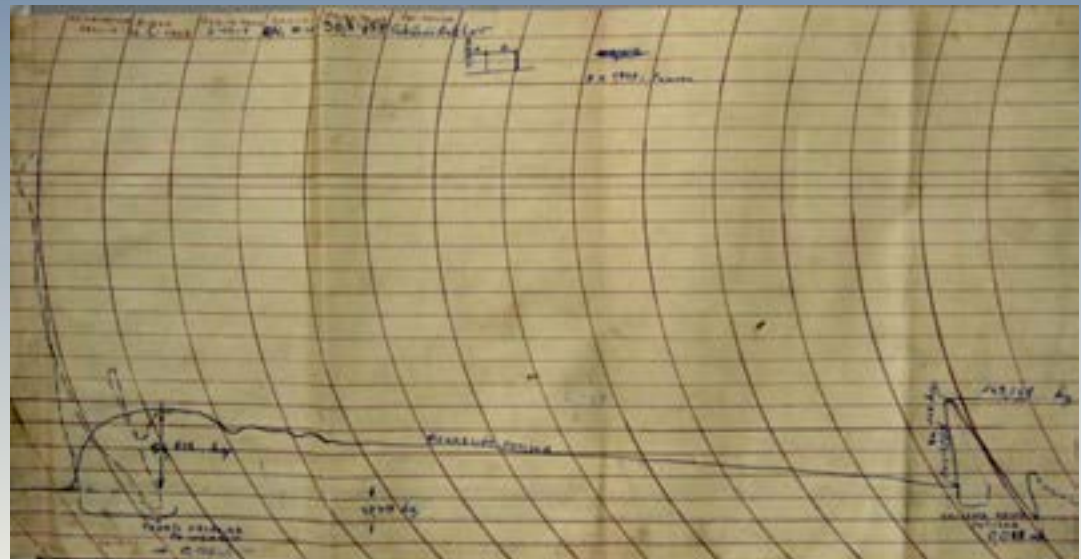
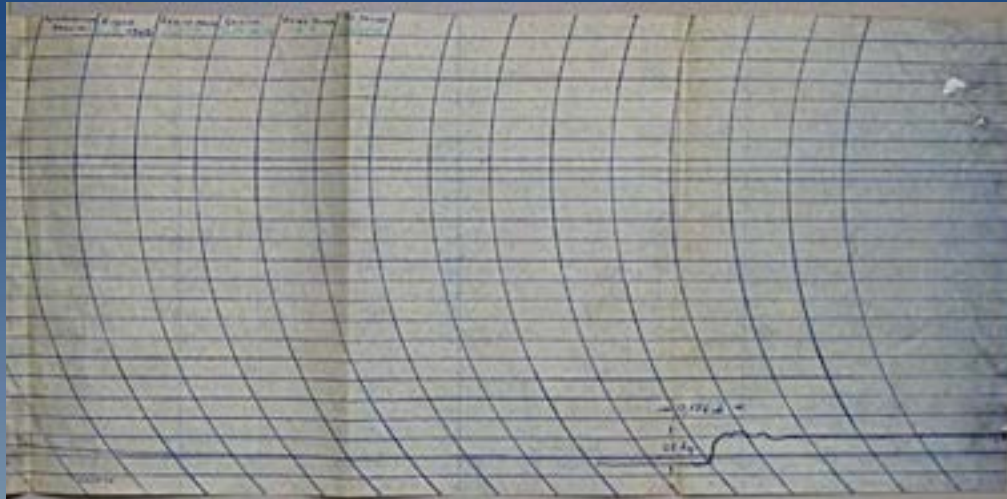


# Lansiranje raketa RR3 i RR4 i lansirni poligon na Grobničkom polju





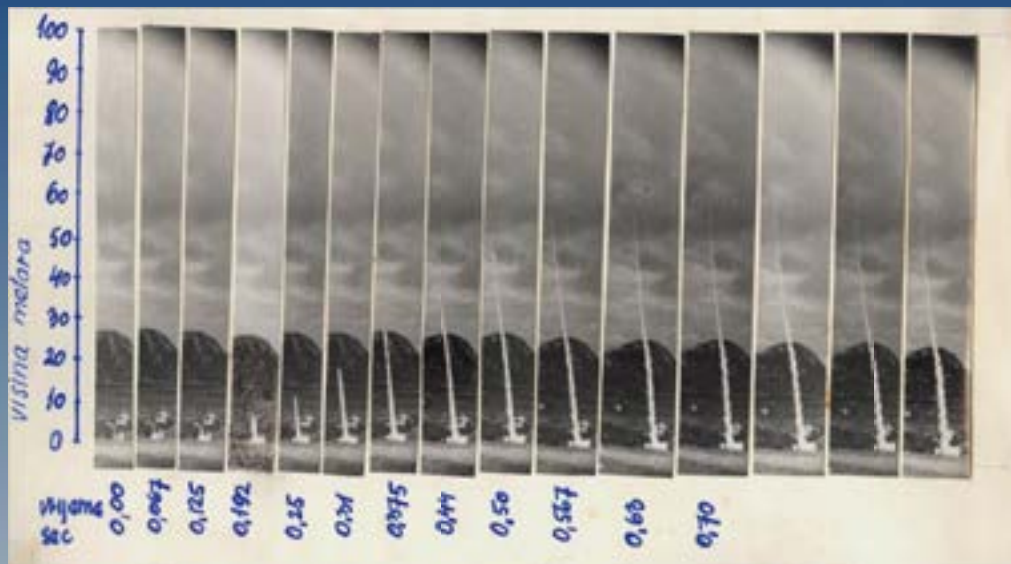
# Grafikoni potiska raketnih motorov



# Praćenje putanje rakete



# Praćenje putanje raketa i mjerenje njene brzine



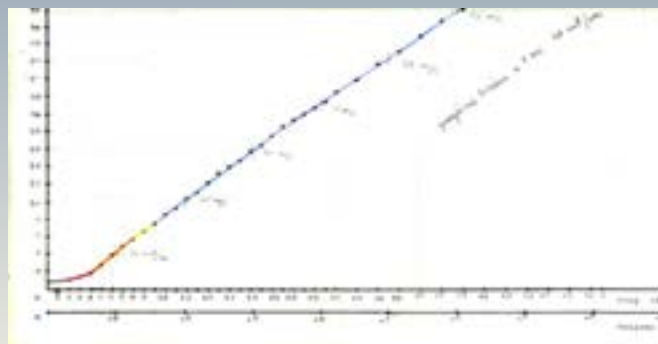
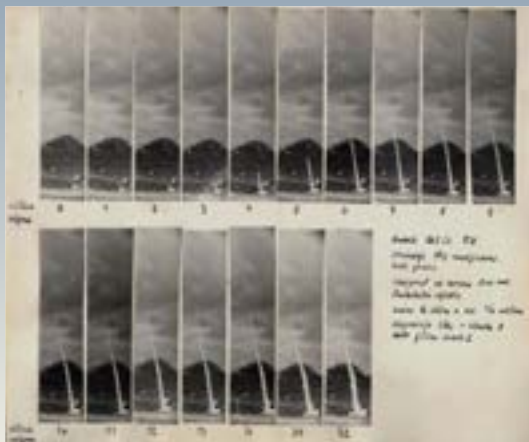
0,00 0,015 0,045 0,135 0,225 0,375 0,60 1,23

0 1 3 3 15 25 45 75

Snimanje lansiranja rakete "Septim"  
 Konstruktor rakete Ivo David iz Virovitice.

Lansiranje rakete na Orošniškom polju 20.9.63. u 15 oo sati  
 Vrijeme promjenjivo u trenutku lansiranja sunčano.

Kamera kodak special 16 mm  
 Objektiv normal. 28mm  
 Brzina snimanja 64 sličice, sektor otvoren  
 Ekspozicija 1/125 - blenda 11  
 Film Gevert 20 220, razvijano u D-76  
 Udaljenost od kamere 250 met.







# Smotra raketnih amatera Jugoslavije



# Novine o smotri raketnih amatera Jugoslavije u Rijeci

## POLETARCI RAKETNE TEHNIKE






Novine o smotri raketnih amatera Jugoslavije u Rijeci. The main article is titled 'POLETARCI RAKETNE TEHNIKE'. It features several photographs showing young men engaged in rocketry activities, including launching rockets and working on components. The text describes the enthusiasm and technical skills of these amateur enthusiasts.

## NCISCU



REPORTER «TT» • MED JUGOSLOVANSKIMI ASTRONAVTI  
**PIONIRJI DOMAČEGA KOZMOSA**

Državni pakt, blisk na putu raketa, ki je Evropa naš oblik, prava...  
 prava na človek oblik, ker jih opilih ni, ampak vsakom je vlinilo...  
 tako vlinilo, da je izkazal njemu več vlinilo. Sicer ni odlik v kosmos, kila...  
 je in potitajni mater vesila, v njej ni bilo logika, in kila niti so, vendar...  
 pa so v nje letelo letjo jugoslovanski astronauti, da si pilinilo čim vlinilo.

## NA GROBNIČKOM POLJU IZNAĐ RIDEKE SASTALI SU SE MLADI RAKETARI JUGOSLAVIJE

# RAKETE NAD KVARNEROM



Državni pakt, blisk na putu raketa, ki je Evropa naš oblik, prava...  
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## TEHNIČKI ORGANIZACIJE • TEHNIČKI ORGANIZACIJE

# VELIKI ČAS IZ RAKETNE TEHNIKE



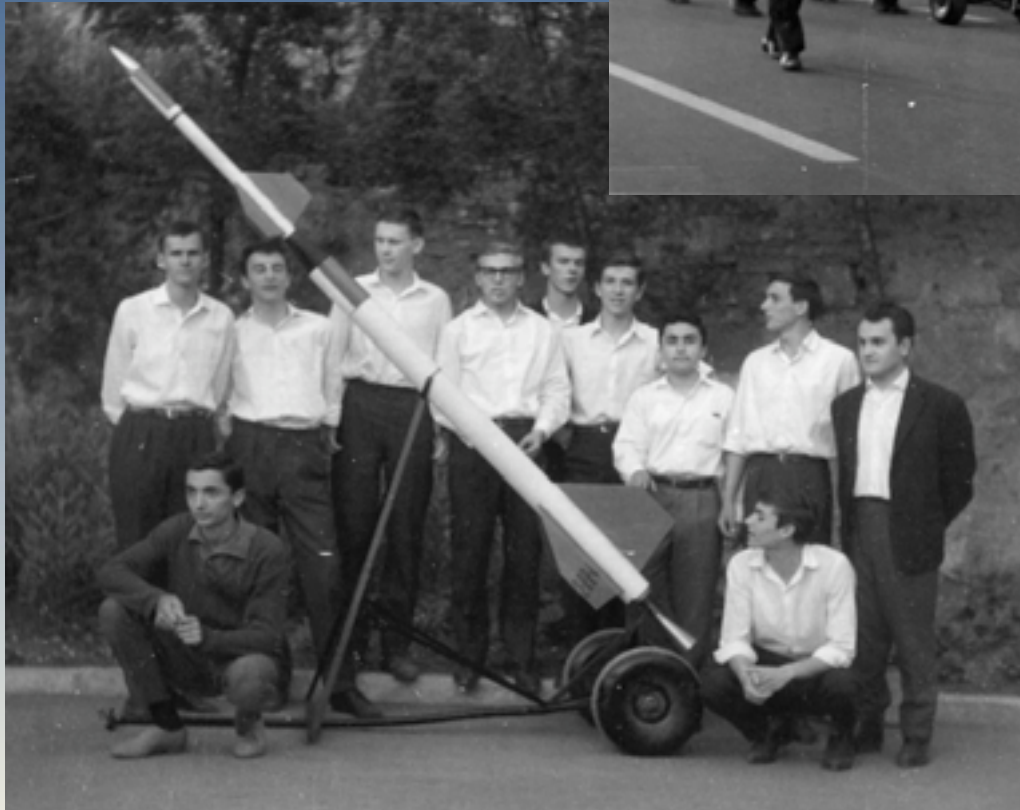

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# Riječki raketaši na aeromitingu u Bovcu



# Učesnici razvoja amaterske raketne tehnike u Rijeci od 1957 do 1965 g.

od 1958/59 godine: Silvano Raffaelli, Raul Fehervari, Riccardo Domijan, Emerih Mady, Albert Ivančić, Vlado Kunst, .....

od        /        godine: Miljenko Smokvina, Boris Biro, Ranko Smokvina, Branko Švast, Nebojša Oluić, Nikola Barić, Marijan Boršić, Miljenka Lasan, Stjepko Pavišić, Ivica Pavišić Zoran Premuž, Ivica Orel, Igor Brajdić, Vjekoslav Katnić, Berislav Srdoč,

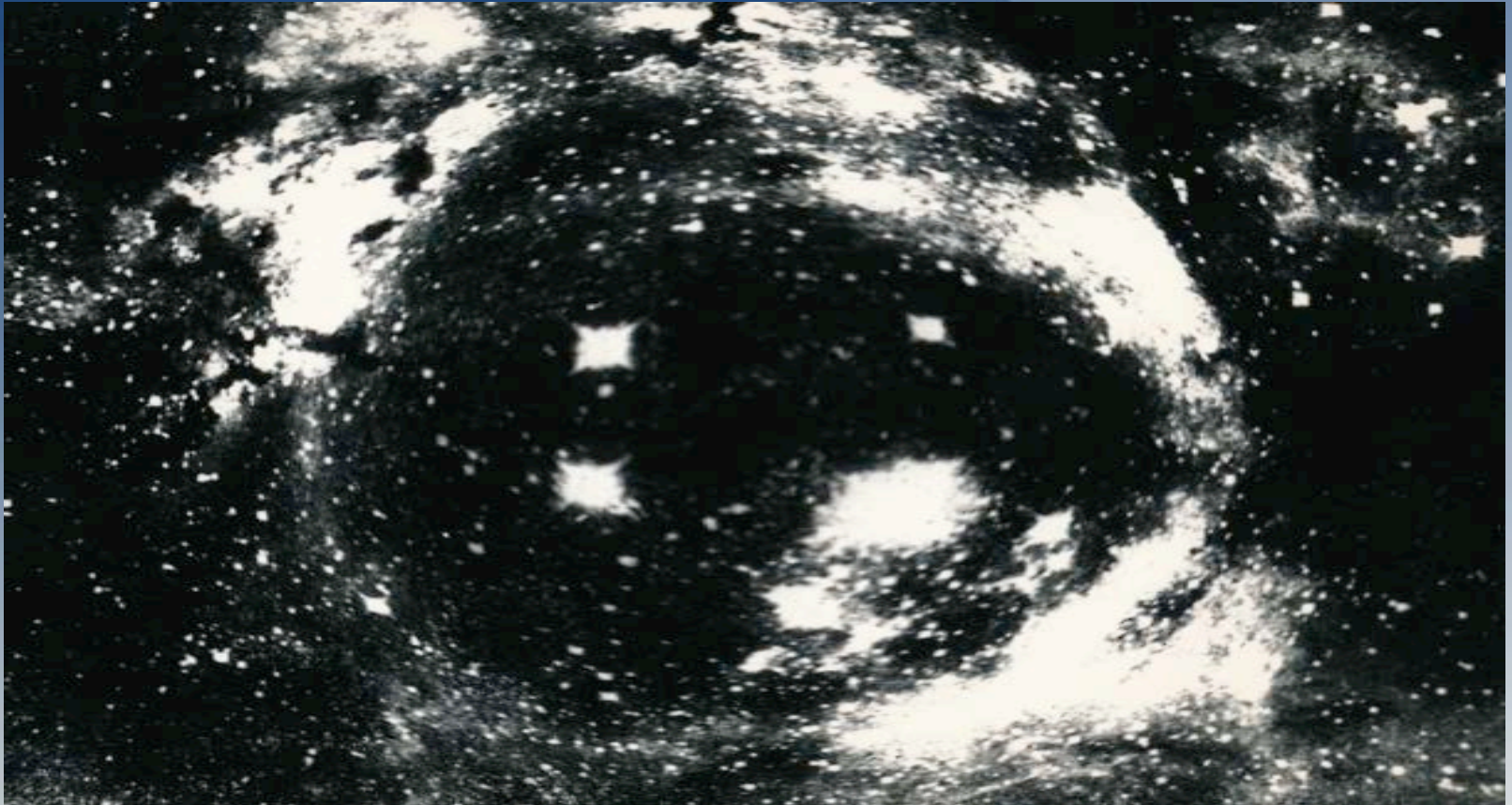
od        /        godine: Dalibor Vukičević, Ivo Ćuzela, Karlo Malik, Smiljan Visković, Darko Vuković, Zlatko Vukičević, Krešo Brnetić, Darko Ćuruvija, Julijan Dobrinić,

od        /        godine: Ivan Vrsalović,

# AERO KLUB



Hvala na  
pažnji !



Naprijed zvijezdama