

ZEICHENHEFT



Naturkunde

Richard Wimmer

5.

1959.

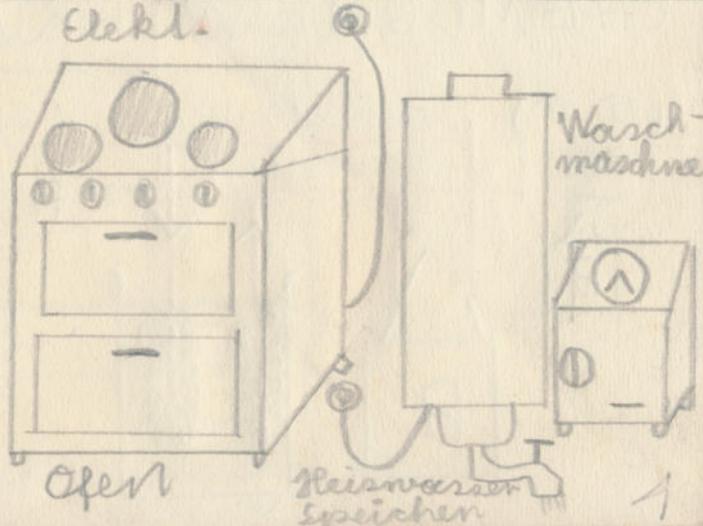
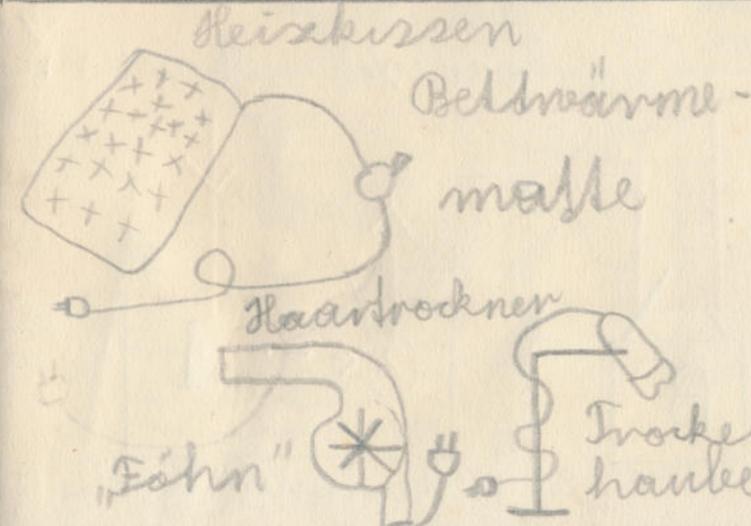
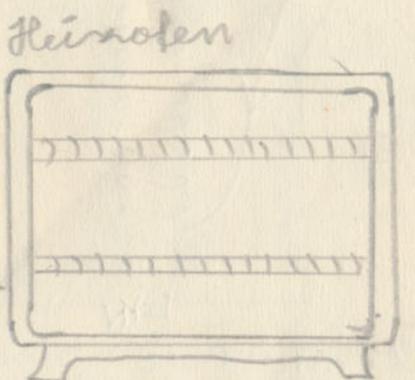
ges. gesch.

HEFT

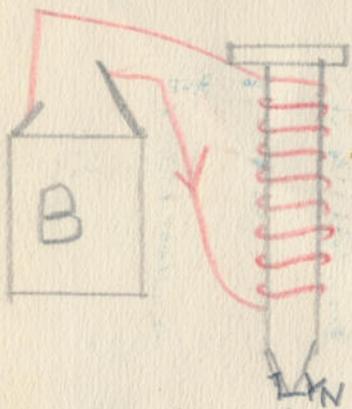


Z 20

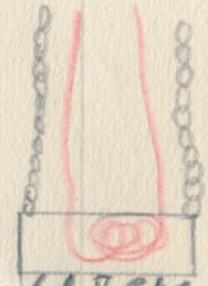
# ELETRISCHER STROM - WÄRMEWIRKUNG



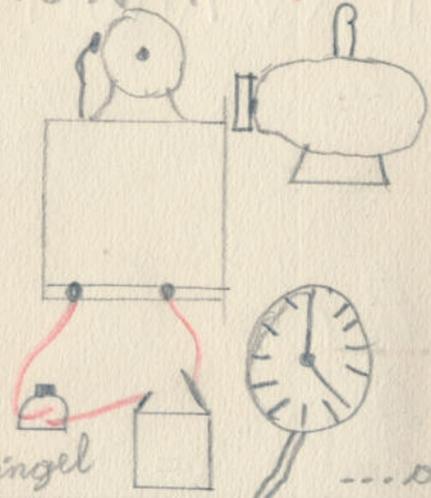
# MAGNETISCHE WIRKUNG



Stromkreis



Elektr. Kran

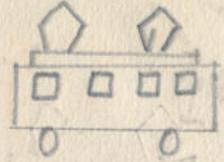


Klingel

Morsegerät



KOMMUNIKATION

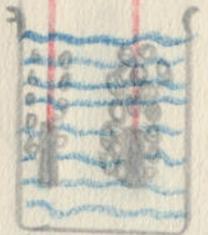
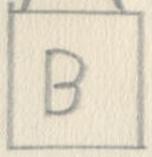


... alle E Motoren

# CHEMISCHE WIRKUNG

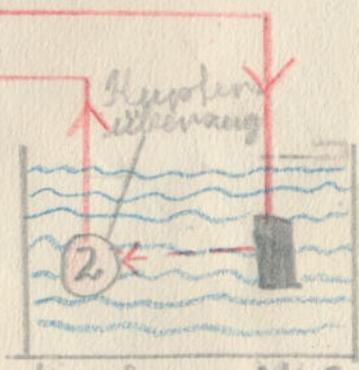
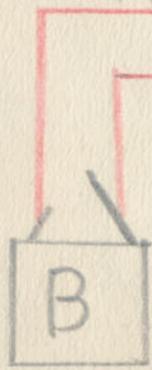


Zersetzung  
Sauerstoff  
Wasserstoff



Wasser

"galvanisch" verkupfern



Kupfererz  
Kupfererz

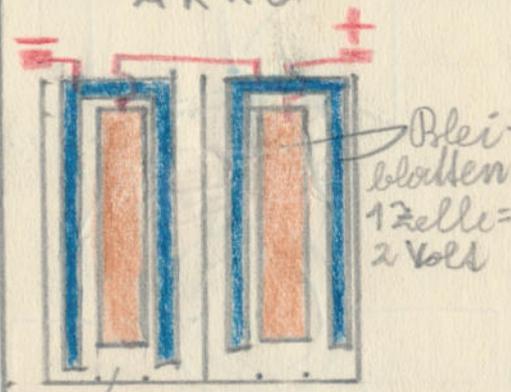
ELEMENT (?)  
BATTERIE (2-?)



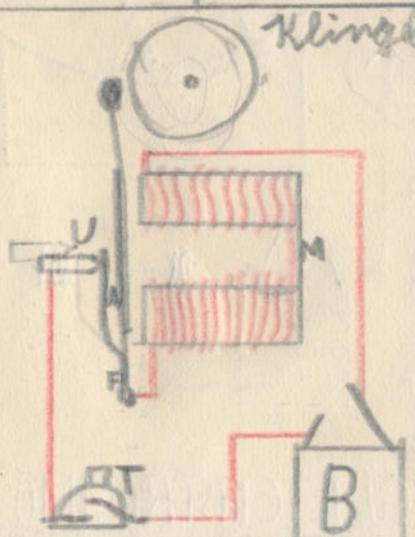
Braunstein, Graphit,  
Salmiak  $\rightarrow$   
zerzetzt Zink

Zinkzylinder 1 Element = 1,5 Volt

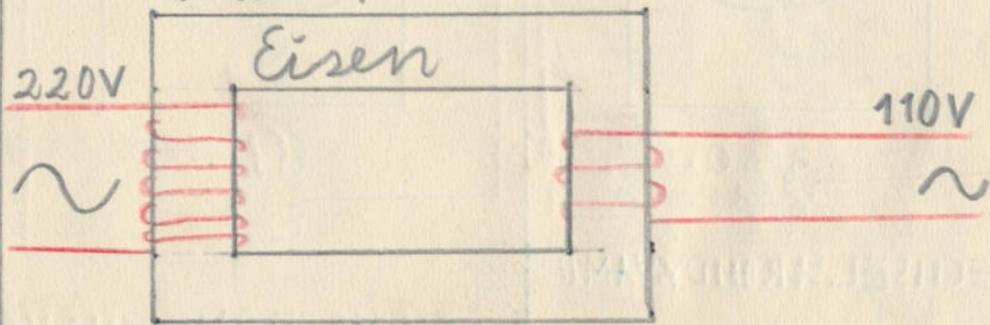
AKKUMOLATER  
AKKU



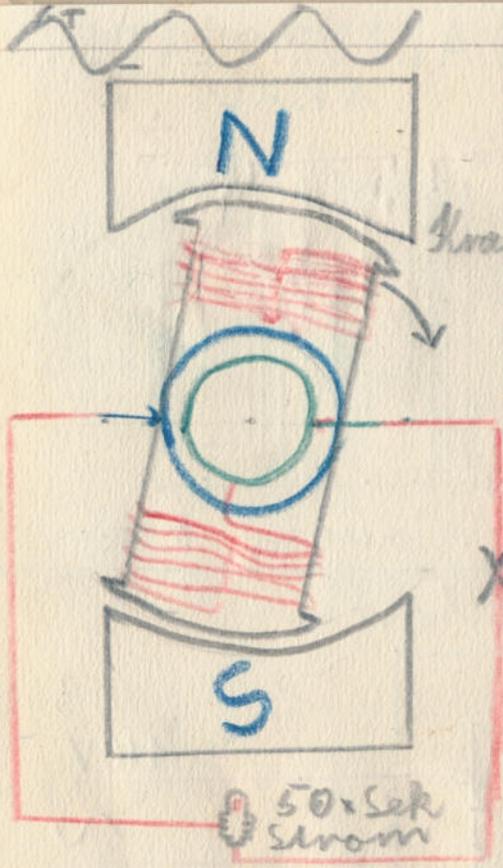
verdünnte Schwefelsäure



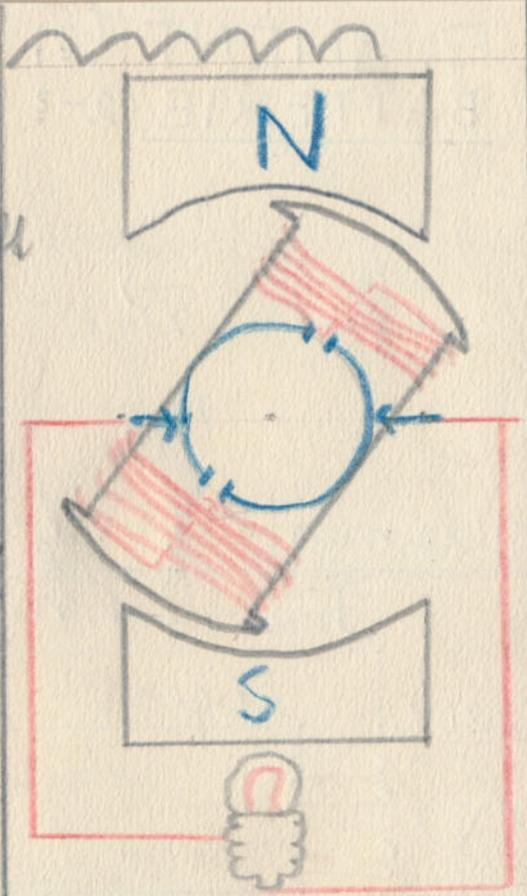
Transformator



wandelt Spannung um.

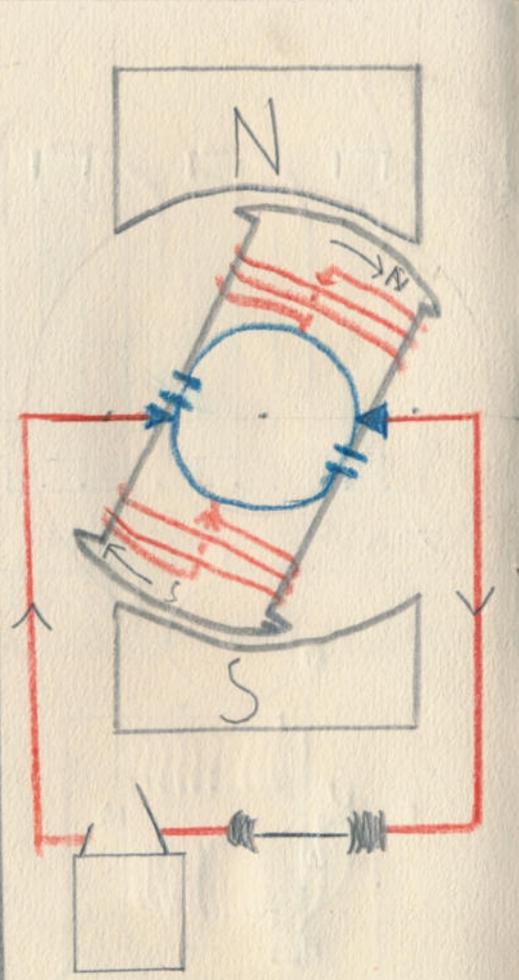


WECHSELSTROMDYNAMO



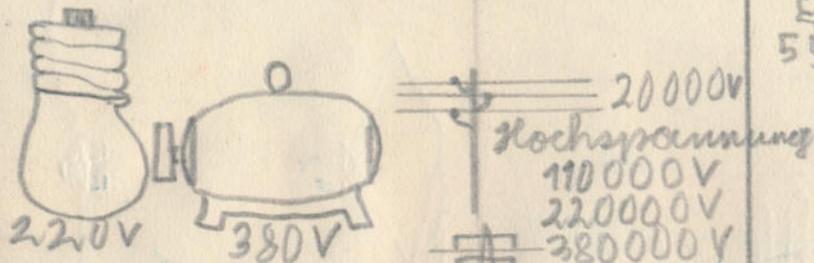
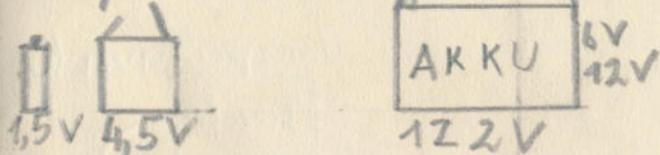
GLEICHSTROMDYNAMO

=



GLEICHSTROMMOTOR

# Spannung

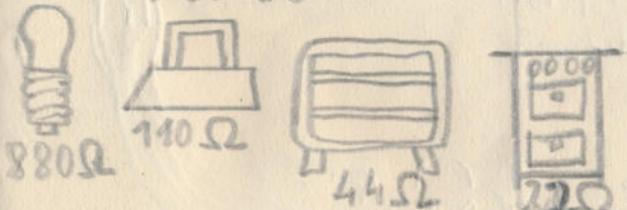


# Niederspannung

klein groß

klein groß

Silber... klein Eisen... groß

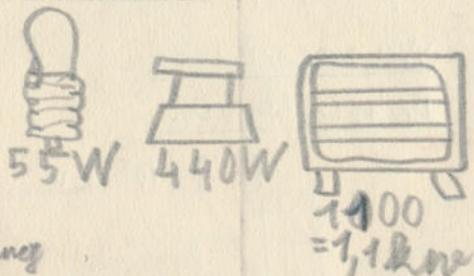


# Widerstand

# LEISTUNG

$$W = V \cdot A$$

1000W = 1 Kilowatt



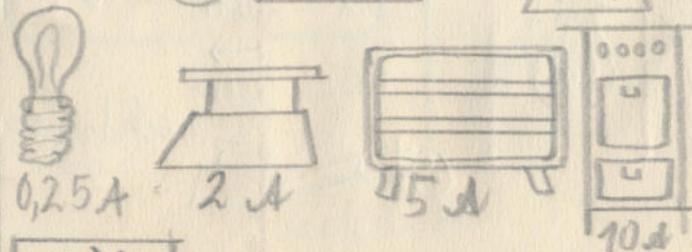
Kilowattstunde

WATT Leistung \* Zeit = kWh

OHM  
Ω

AMPERE

A



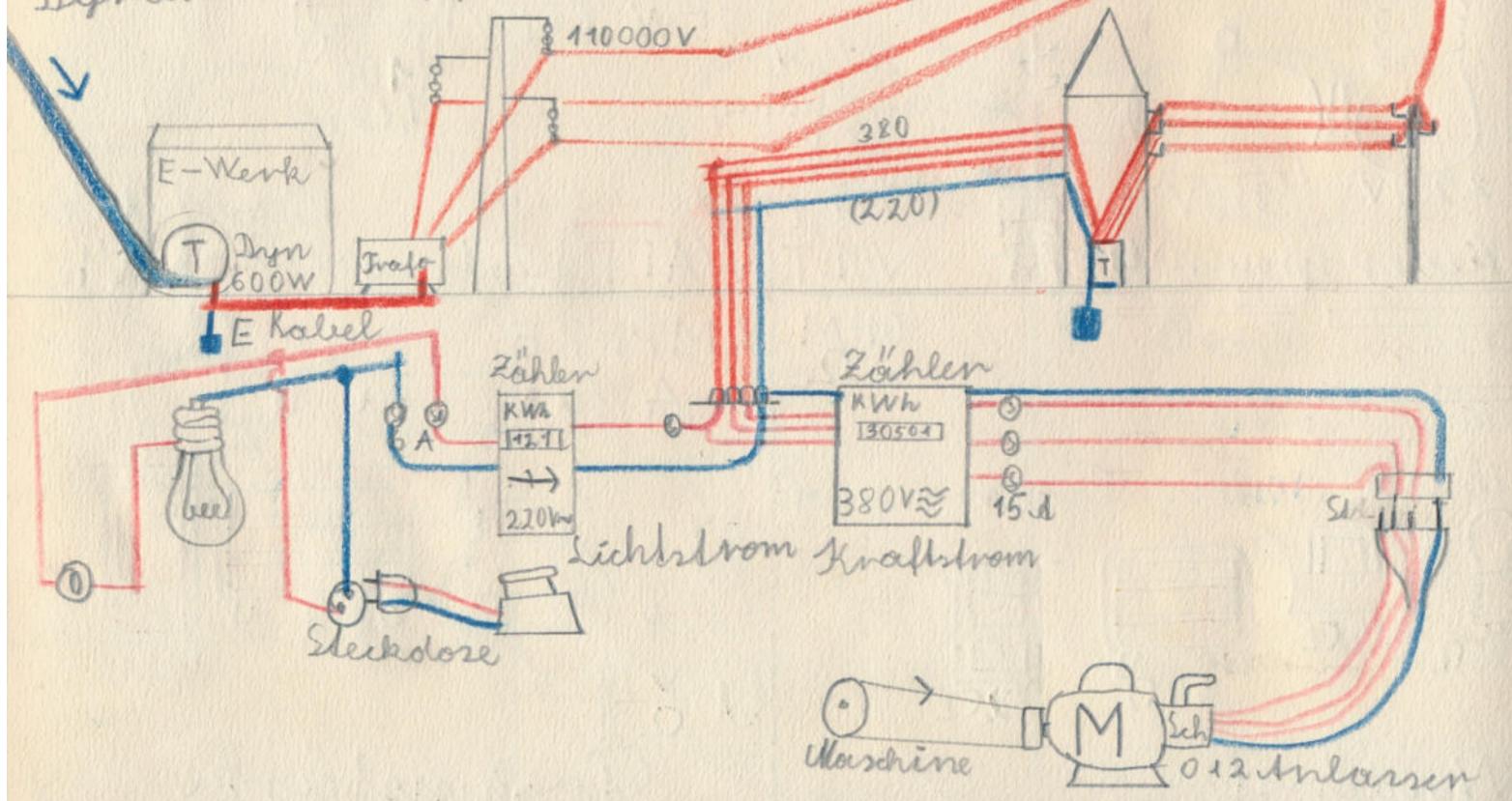
$$A = \frac{V}{\Omega}$$

# Stromstärke

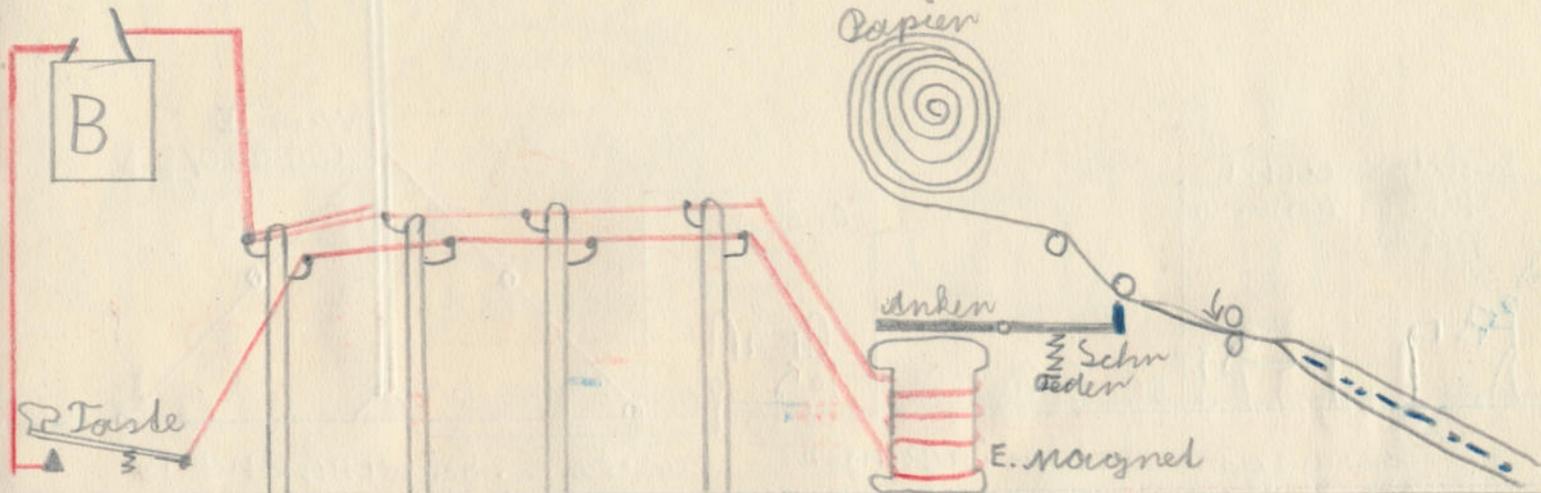
Laufwerk  
 Staunwerk (Speicher)  
 Turbine  
 ↓  
 Dynamo

Wasserkwe.  
Dampfkwe.

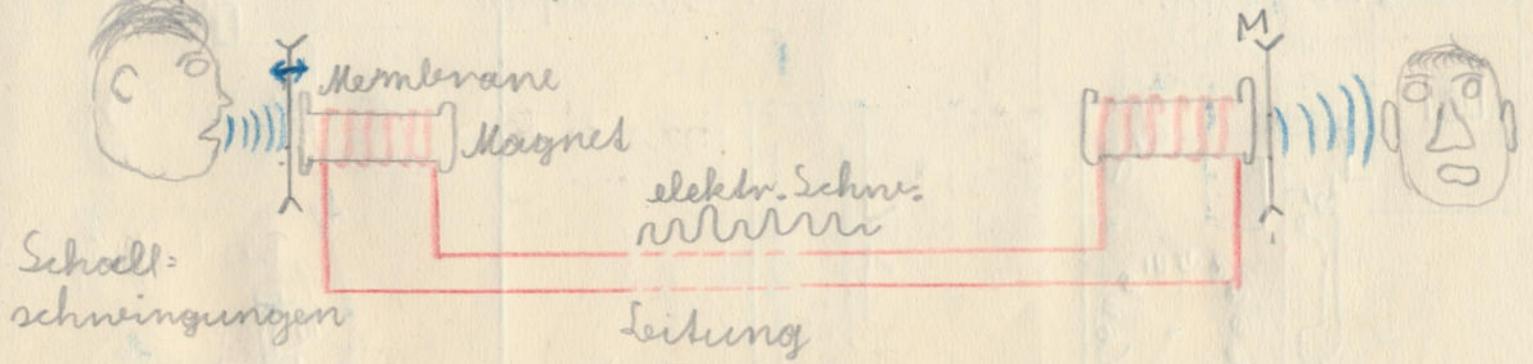
Wasspannwerk  
 Trafo



# Fernschreiben (Telegraph) Morse ---a---b---c



# Fernsprechen (Telephon)



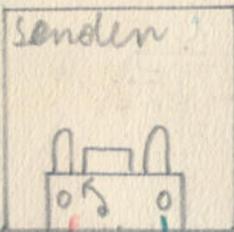
# DER RUNDfunk

Senderraum  
Mikro-  
phon



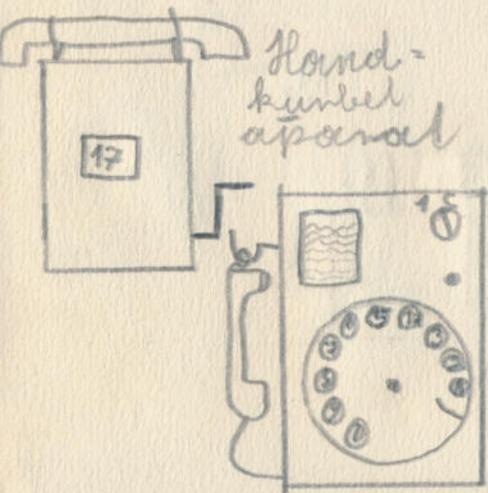
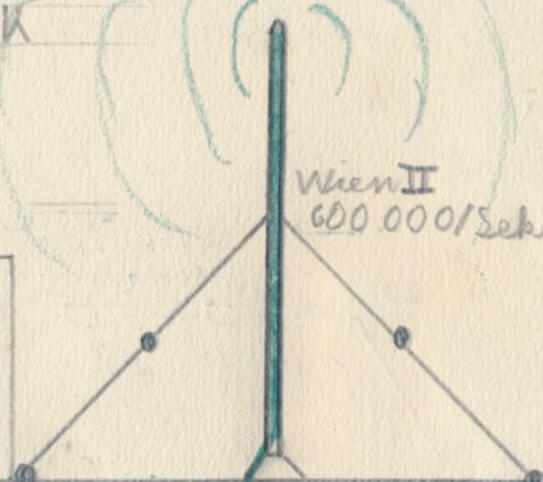
50-9000/Sek

langsame el. Schwingungen



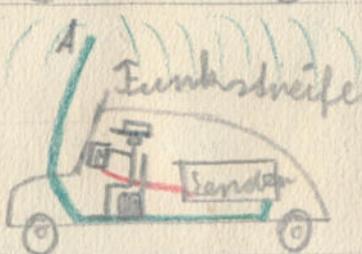
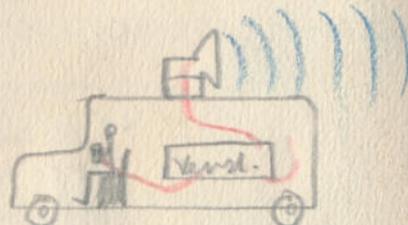
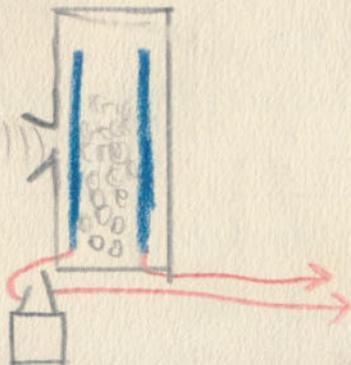
rasche el. Schwingungen

Wien II  
600 000/Sek

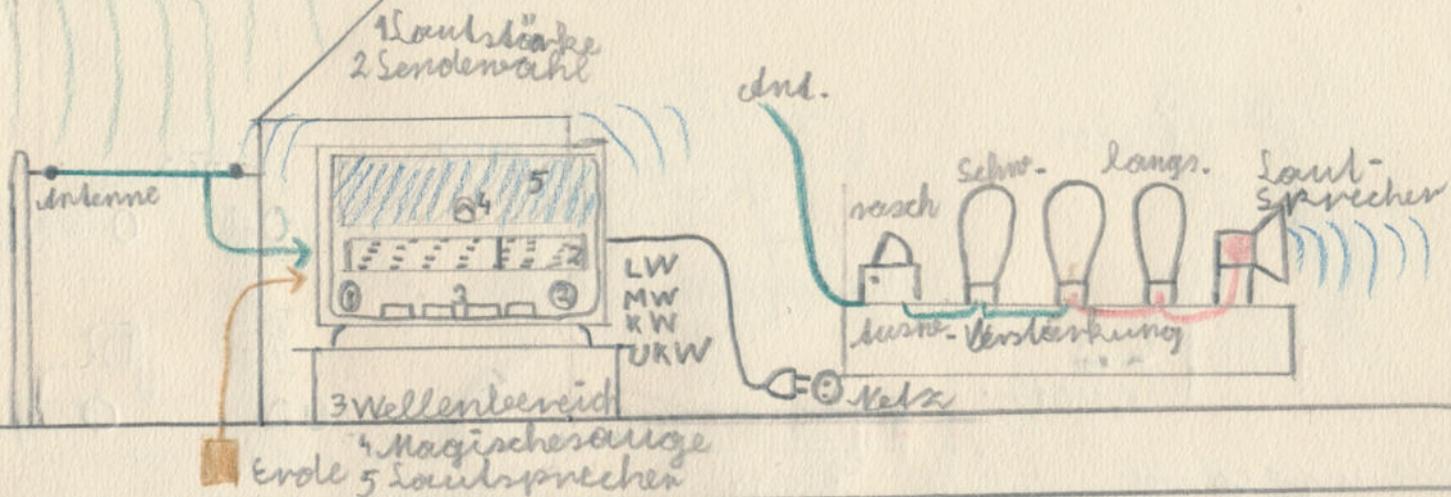


Hand-  
kunbel  
aparat

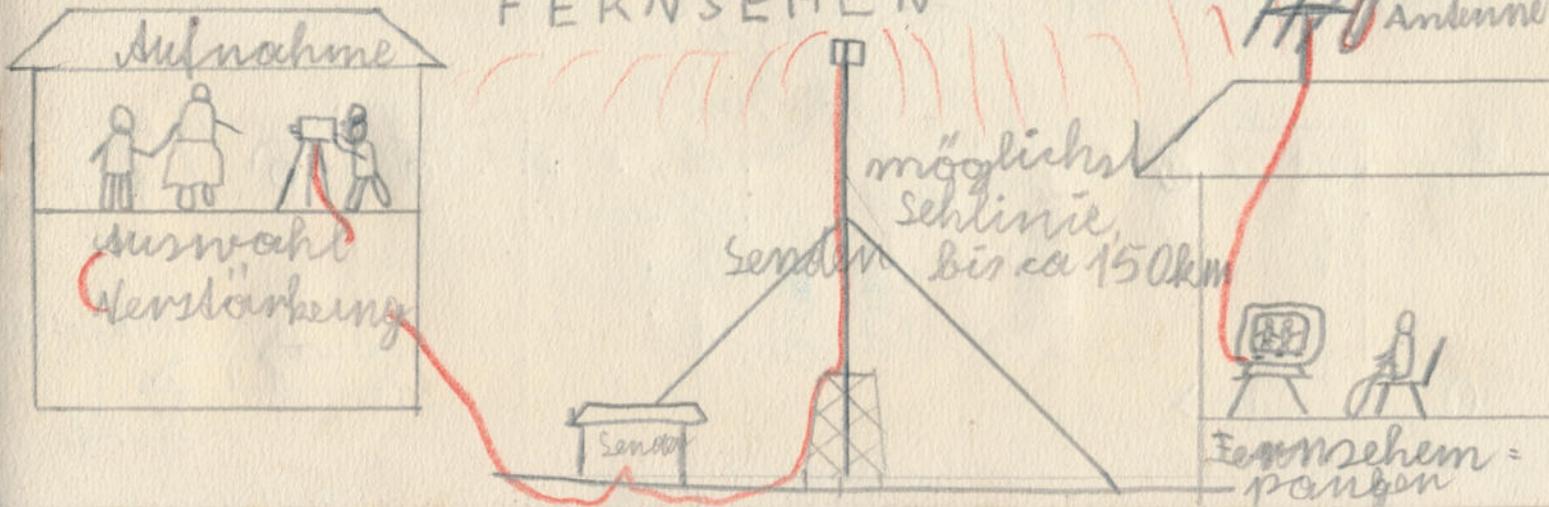
Kohlkornermikrophon



Funkstreife



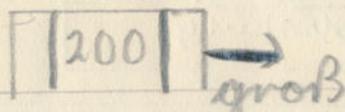
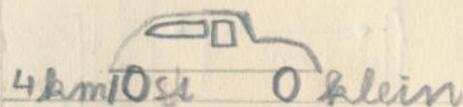
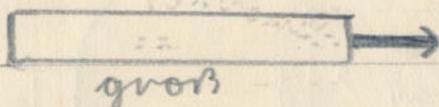
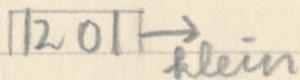
## FERNSEHEN



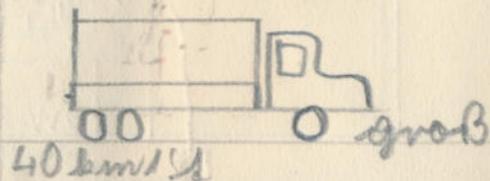
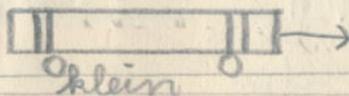
# REIBUNG

## Gleitende Reibung

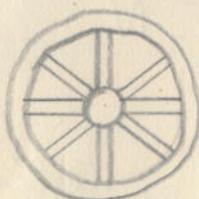
## Wucht



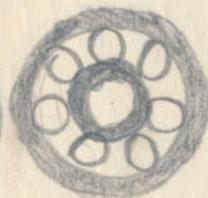
## Rollende Reibung



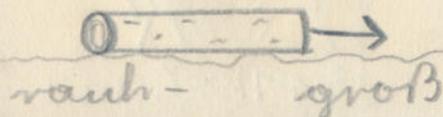
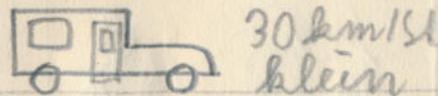
Reibung jedoch  
unbeständig/nahmendig!



Rad

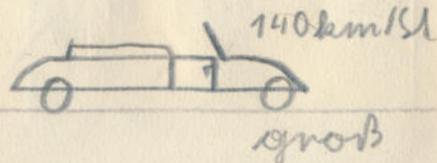


Kugellager  
Rollenlager



Glattdurch: Öl  
Fell

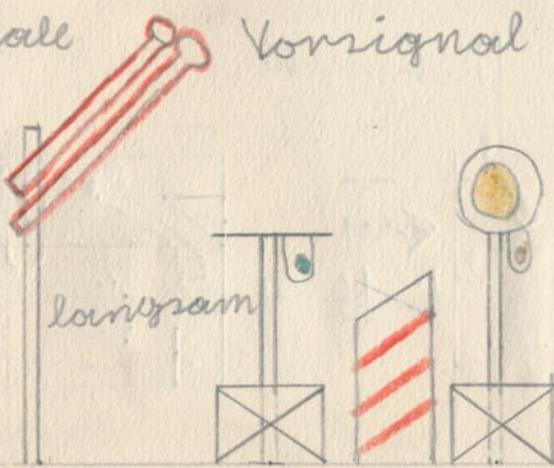
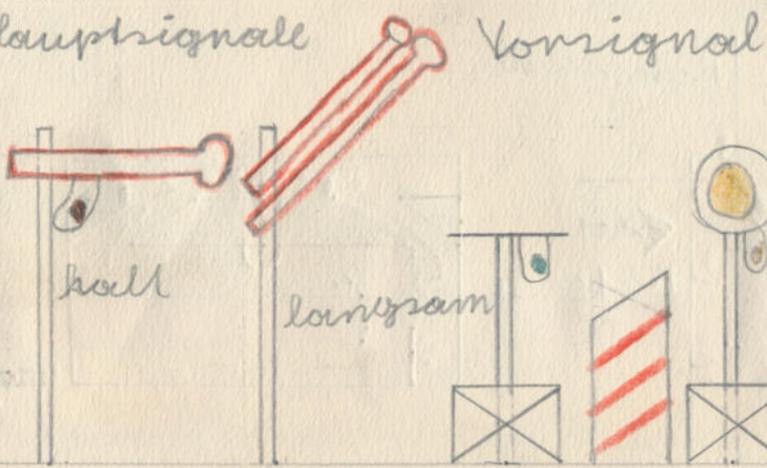
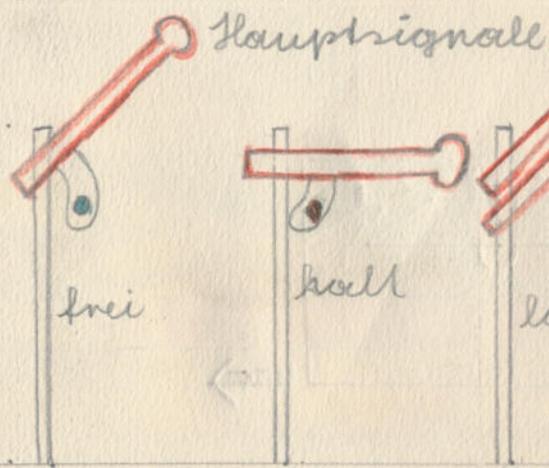
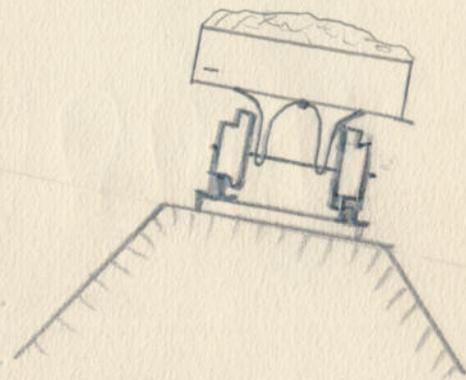
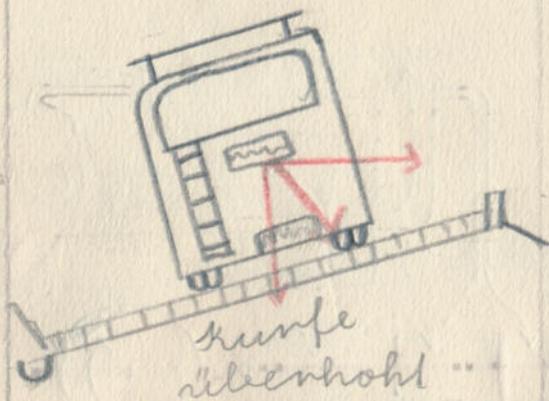
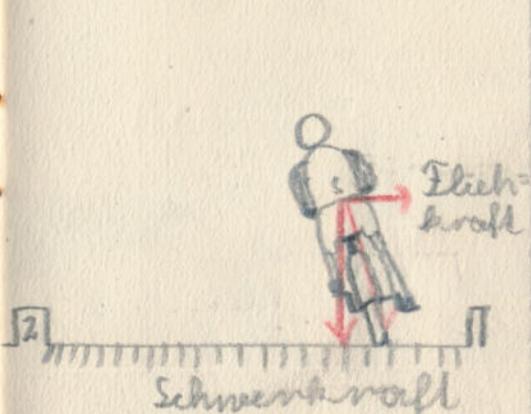
Wachs Gipsöl Seife



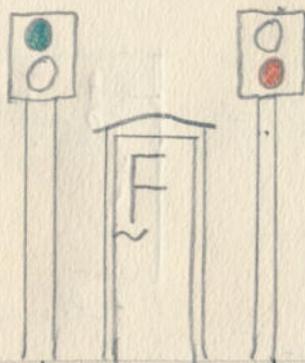
FAHRT

IN DER

KURFE

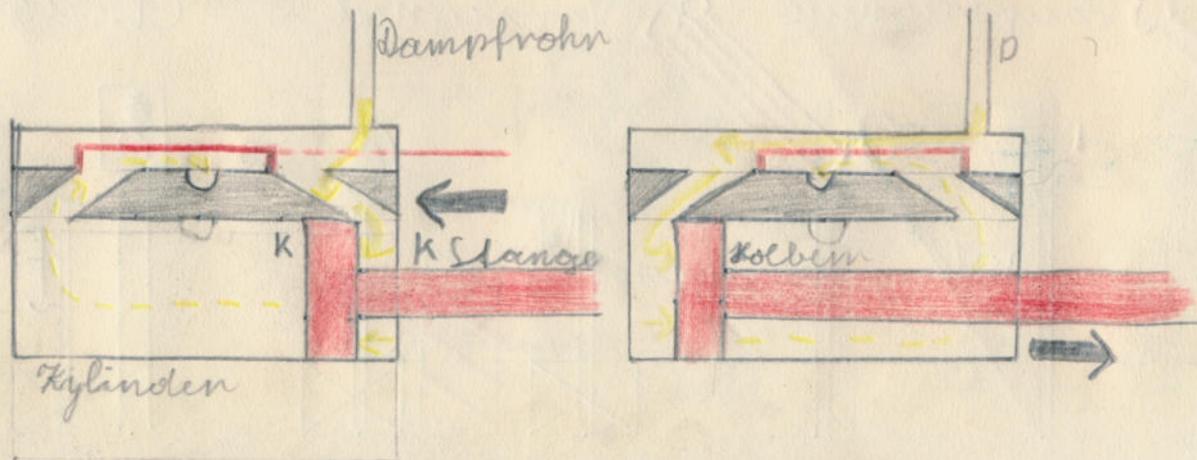
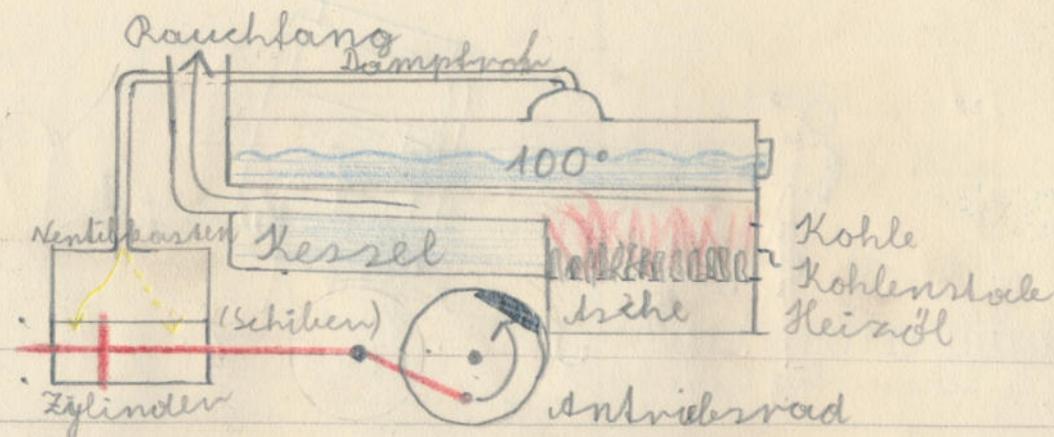


El. Signal

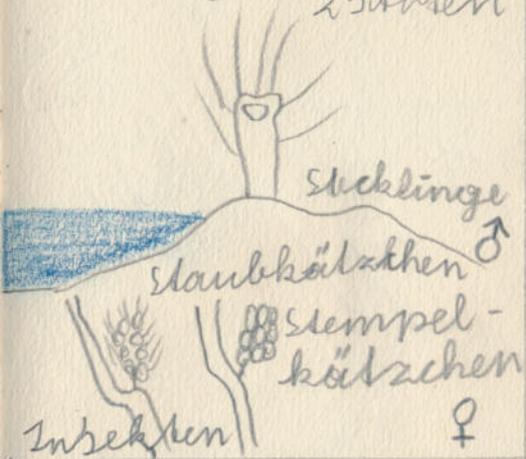


Zeichensprecher

# DAMPF MASCHINE - DAMPFLOKOMOTIVE J. Wall 1769



→ 2mei  
häufig Weide  
25 Arten



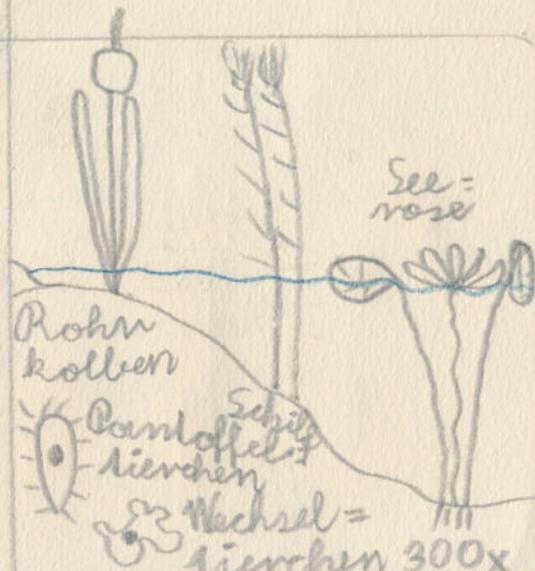
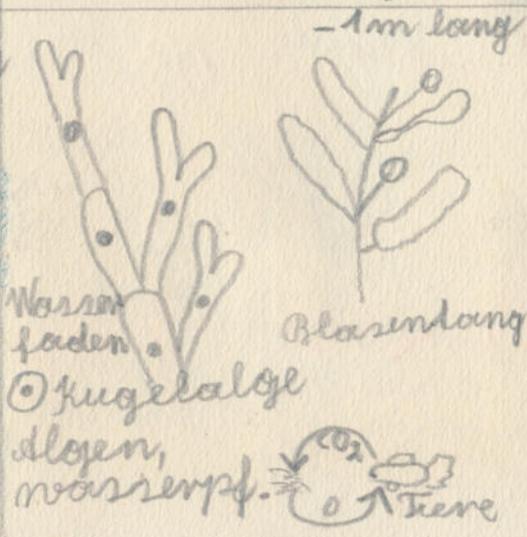
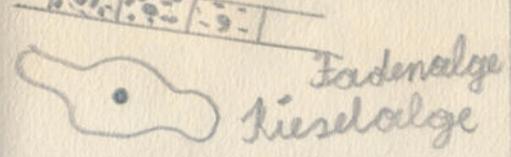
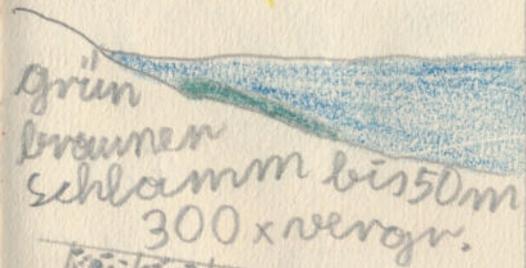
IM UND AM WASSER



Wasserschnecken-  
lilien



Algen 5000 Arten



# Ringelnatter

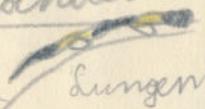


- 1 1/2 m

Kornschiloden

Eier

# Feuersalamander



Lungen



Laich

Kiemer-Larven

# Frosch

(Kiemer) x  
Kaulquappen

4000  
Eier

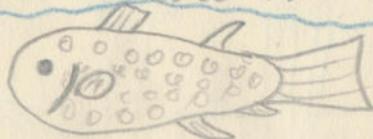


Fliegen,  
Schrecken



Lunge  
5 Jahre

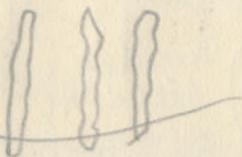
# Fovelle - Kraken



Egel



Würmer



Schwän

Fühler



Mund  
Augen

Kopf-  
brust

200 Eier

Hinterleib

Flosse

# Muschel



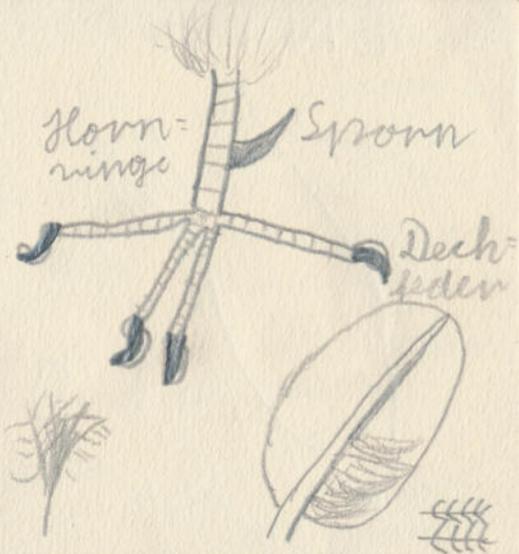
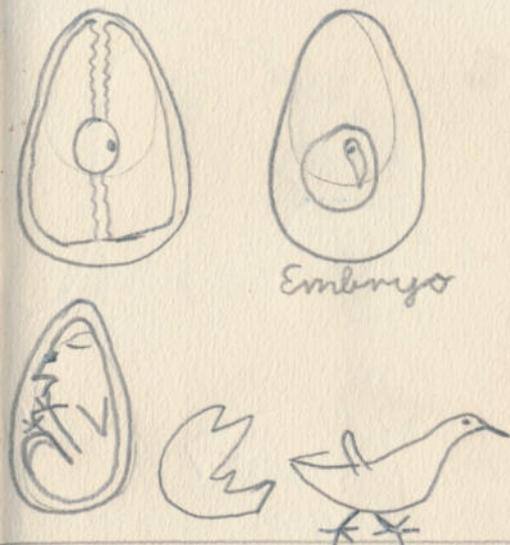
Schloß

Fuß

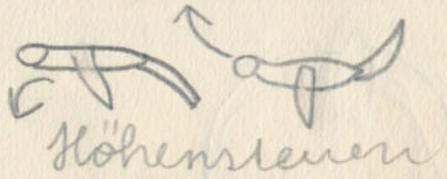
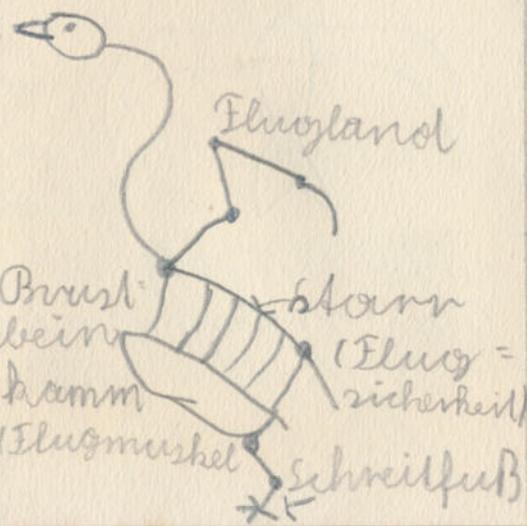
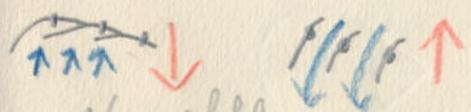


Schließmus-  
kel  
300 000 Eier

HAUS HUHNER

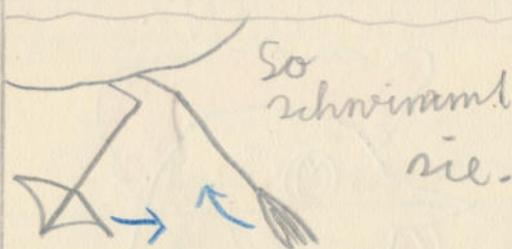
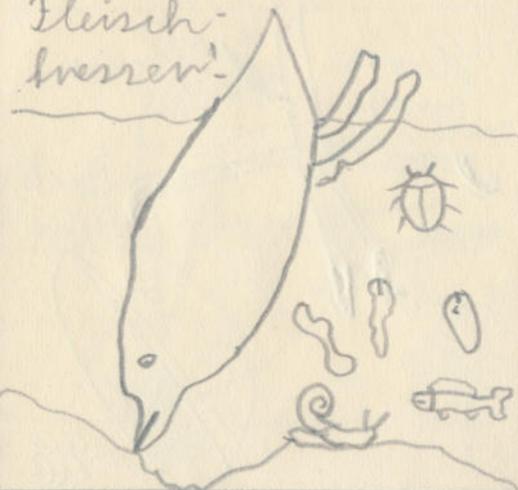


Niederschlag. Aufschlag.



# ENTE

Fleisch-  
fresser!



# TAUBE

100 km/h

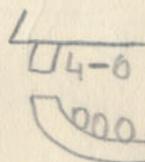


short-  
flügig

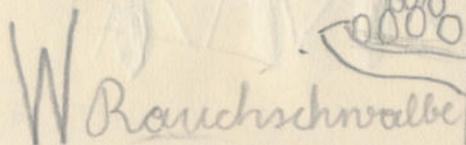
Orts-  
sinn

Knopf  
Vorwachen } ernährt  
Kauwachen zerreiben

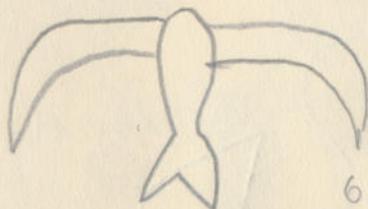
Mehlschwalbe



Zugvogel

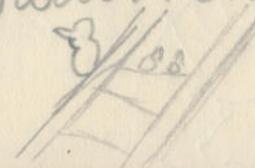


W Brauchschwalbe

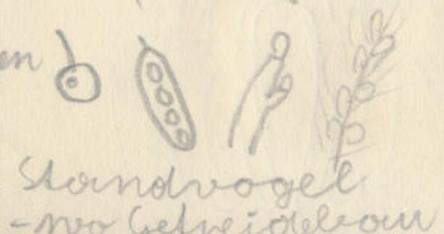


Sohl  
600 Ins.

Mauersegler  
Hausrotschwänchen



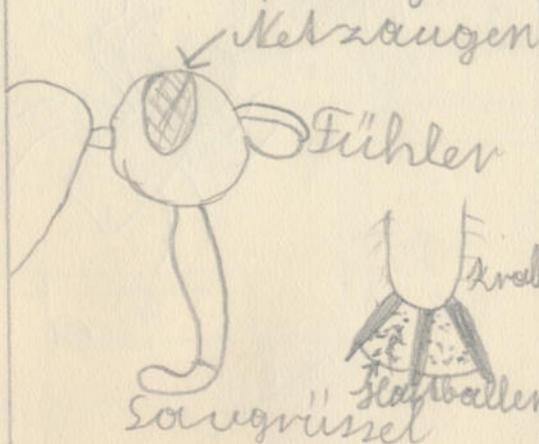
# Haussperling





Stubenfliege

100 000 Bakterien

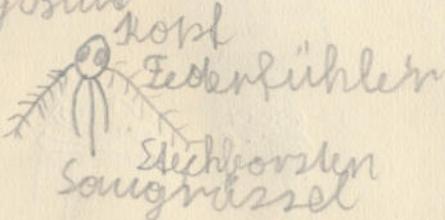
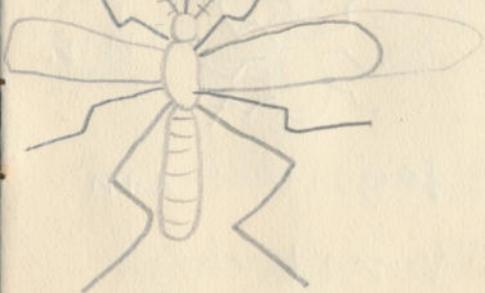


Typhus, Cholera,  
Ruhr, Blasenentzündung  
u. s. m.

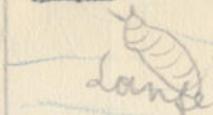
7 Mill -  
Nachkom = 1 Weibchen  
Puppe  
Eier (Made (Motte))

STECHMÜCKE (GELSE)

Weibchen sticht, saugt Blut



300  
Larve

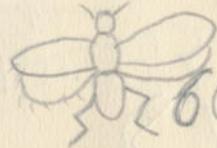


Puppe



Kleidermotte

Schmetterling

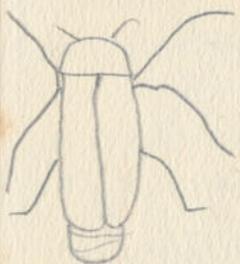


60 Eier



Raupe frisst

Küchenschabe



"Schabe"

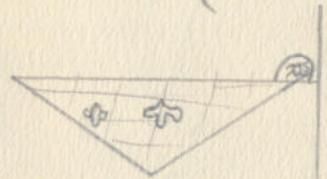
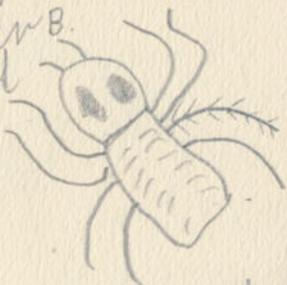


Nestleck

Eier

Hausspinne

4 Paar B. behaart



Assel



feuchte Räume

atmet durch Kiemen

graue Hoden =

pflanzen



FLOH

2 mm

Keine Flügel!



Eier in Bissen

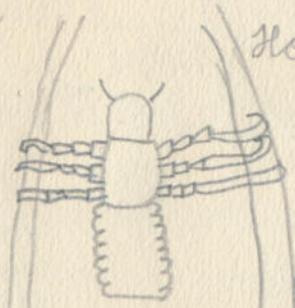
Spannungsein

krankheitsüberträger

LAUS

3 mm

Haar



Ei

"Nisse"

Bettwanze



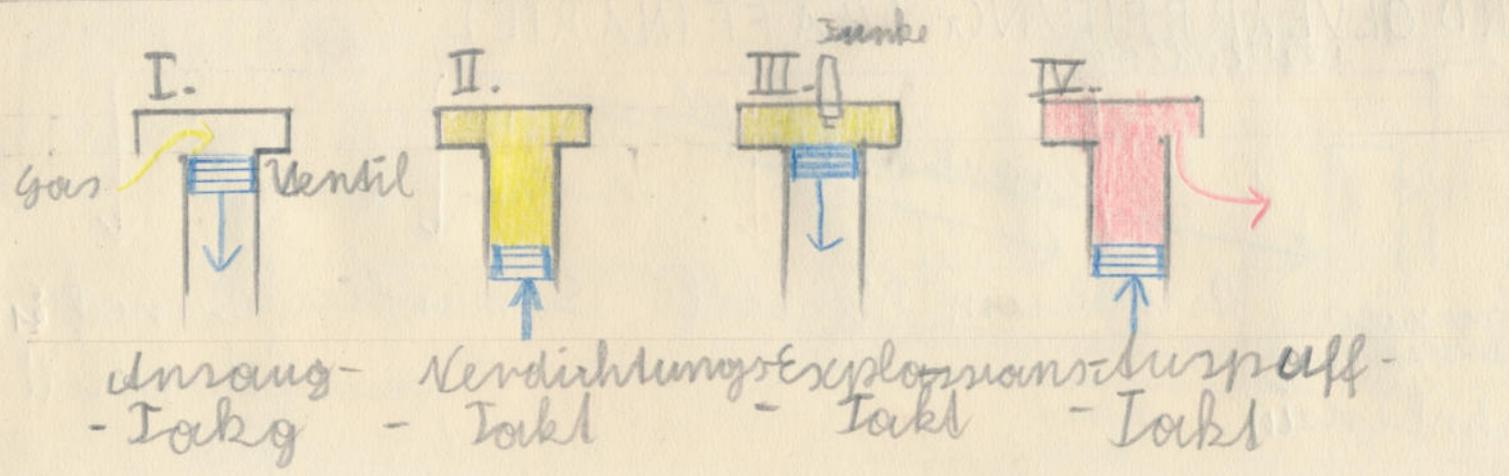
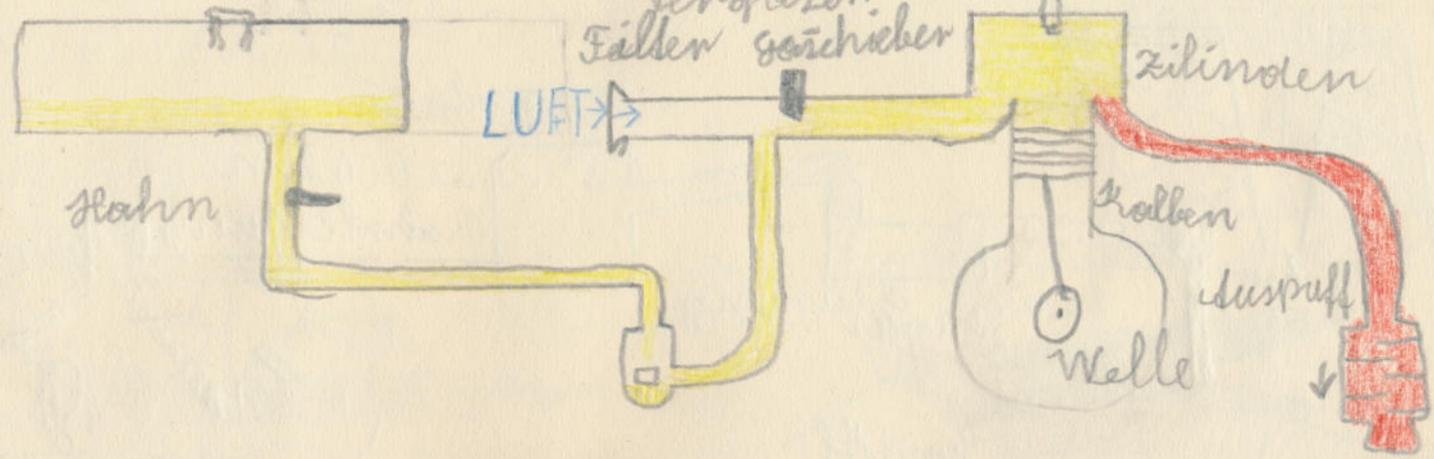
brown  
6 mm

lagern im Nestleck

Benzintank

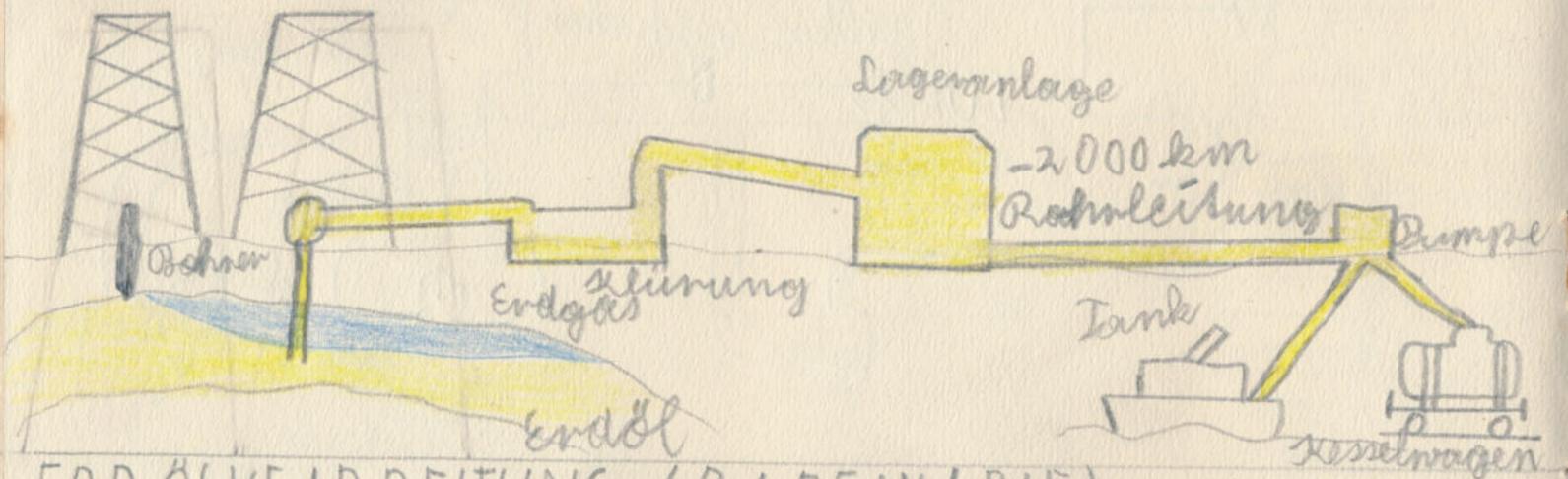
BENZINMOTOR

Zündkerze

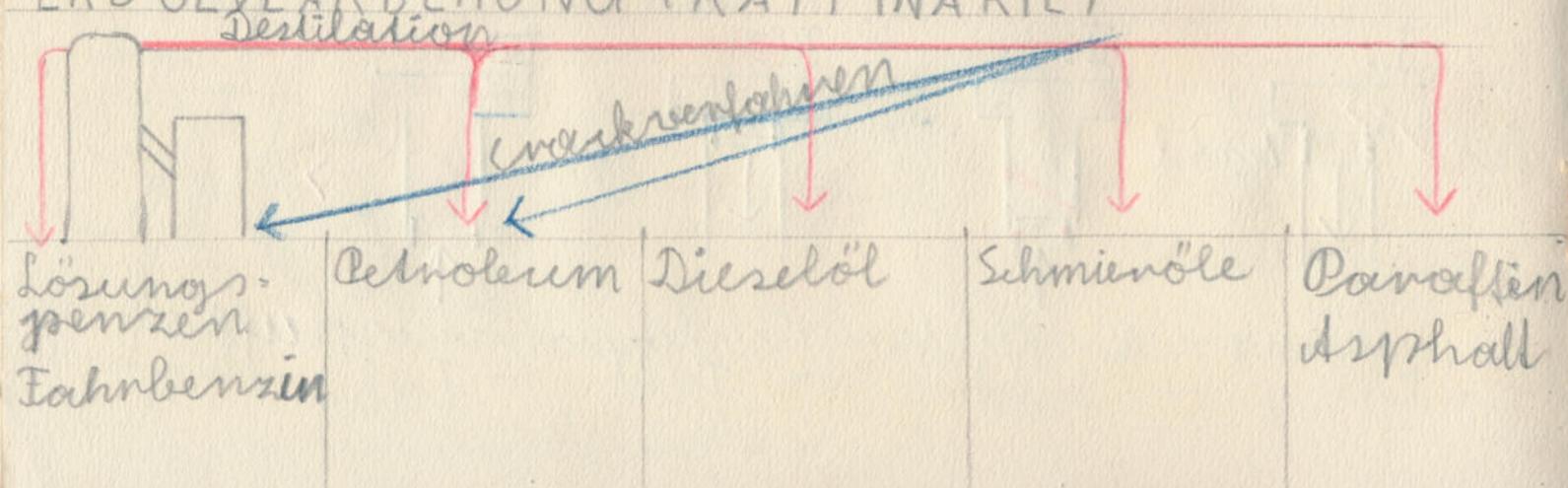


Bahnturm

# ERDÖLGEWINNUNG

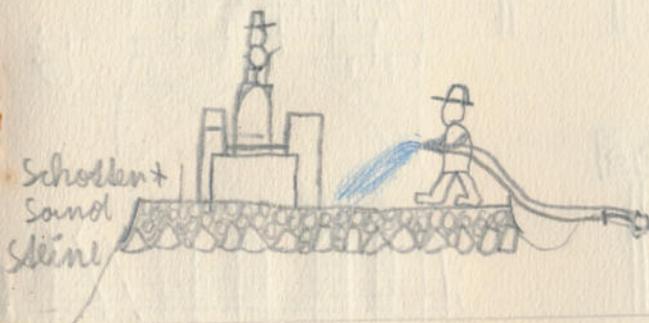


# ERDÖLVERARBEITUNG (RAFFINARIE)



# STRASSENBAU

## SANDSTRASSE



## TEERTRÄKDECKE

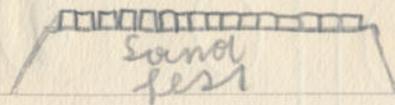
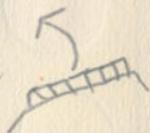
Wölbung =  
Wasserabfluß

Teer-Asphalt  
+ Kies

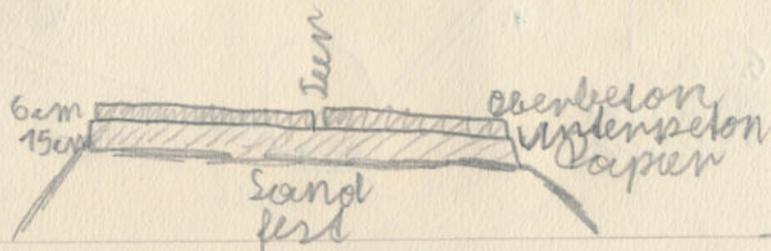


## PFLASTERUNG

Neigung  
in der Kurve



## BETONDECKE





# GUMMI



Kautschuk

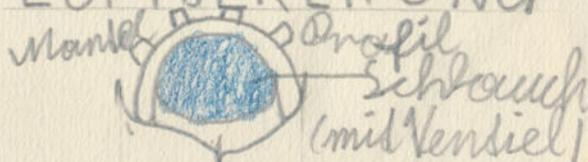
(5-45%)



Schneefel

Schlauch, Gummi  
 Mansel, (Bereifung) Sohlen,  
 Stiefel, Mansel  
 Ringe, Dichtung, Schläuche  
 Isolierung u. d. w.

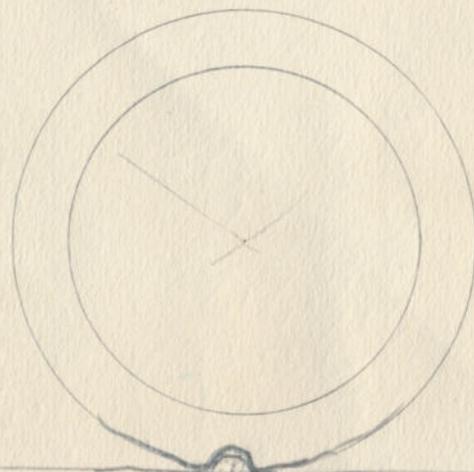
# LUFTBEREIFUNG



Road



Eckel



A + Ü = Atmosphären Überdruck

# Naturkunde 1

1958/59

1. Säugetiere im Haus
2. Weinbau
3. Spinnstoffe I
4. Spinnstoffe II
5. Leder, Waschmittel
6. Elektrizität I
7. Elektrizität II
8. Eisenbahn III
9. Pfl. u. Tiere im u. am Wasser
10. Vögel im u. am Hause
11. Insekten im Hause
12. Verkehr auf den Straßen