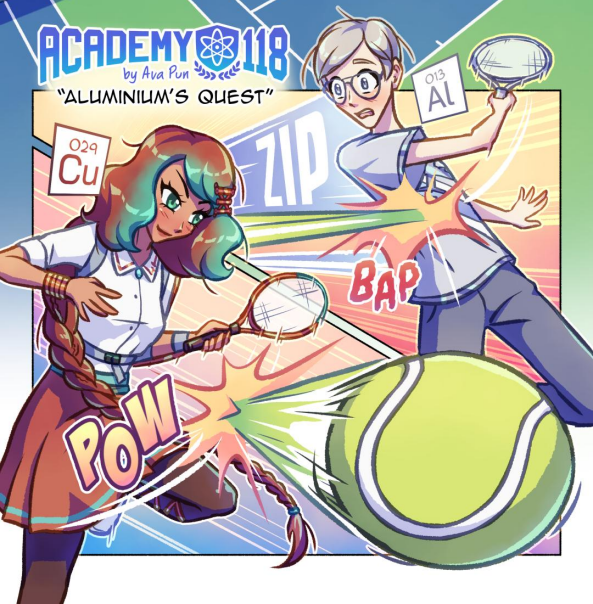


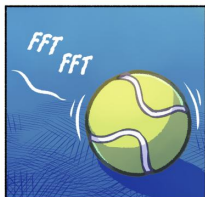
ACADEMY 118

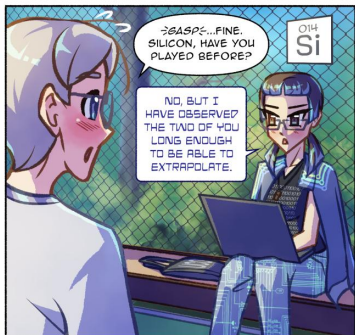
by Ava Pun



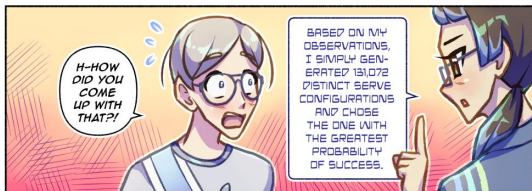
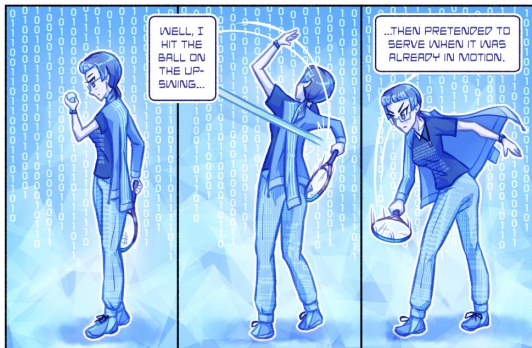
"ALUMINIUM'S QUEST"

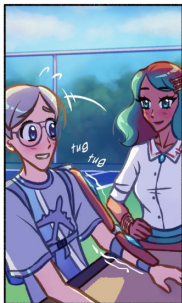
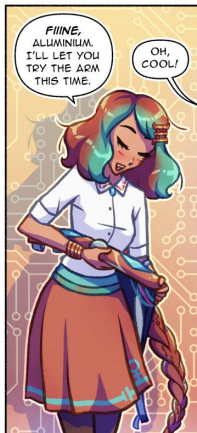




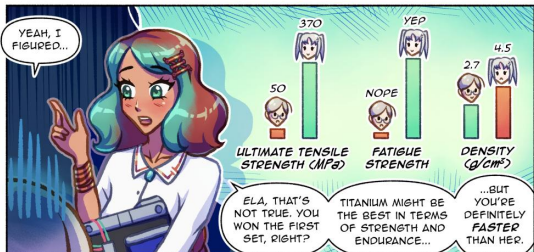














HEY YOU!

U R P.S. R.I.D.E.

094 Pu

092 U

086 Ra

084 Po

JUST—

WHERE—

D'YOU—

THINK—

—YOU'RE GOIN'?!?



I-I'M S-S-SORRY,
P-PLUTONIUM...I-I WAS
G-G-GONNA BE LATE FOR
CHEMISTRY...P-P-PLEASE
UNLOCK THE DOOR...P-
PLEASE DON'T HUR-

UNLOCK
THE DOOR?
I DIDN'T
LOCK IT.

IT WAS
—JUST A BIT
STUCK.

WOT

WOW,
YOU'RE
WEAK.

WANNA KNOW WHAT
HAPPENS TO **LIGHTWEIGHTS**
LIKE YOU WHO CROSS
RADIOACTIVE TERRITORY?

YELP!

N-NO!
PLEASE!

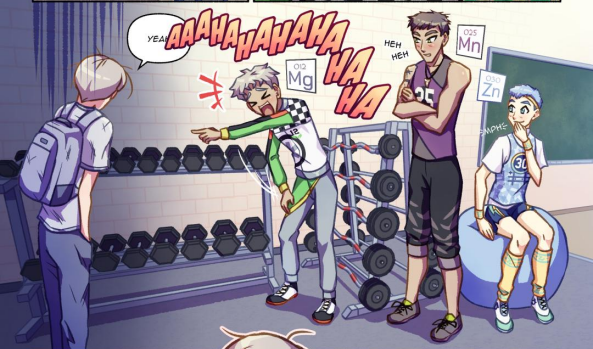


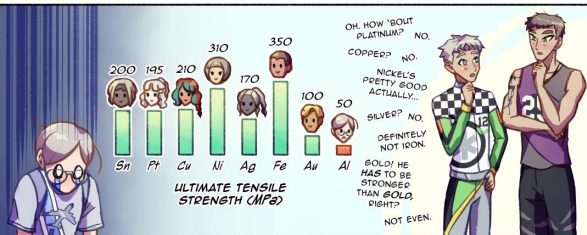
POLONIUM!
URANIUM! RADIUM!
YOU CAN GO
NUCLEAR ON THIS
WEAKLING.



N-NO!
PLEASE!
LEAVE ME
ALONE!







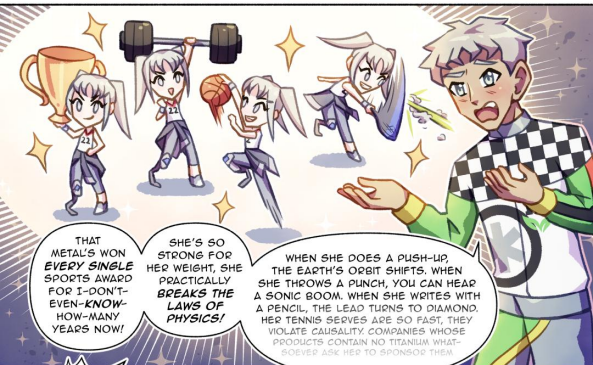


~SIGH~
MAG, ARE
YOU GONNA
HELP ME OR
NOT?



OKAY,
OKAY, I'M
SORRY,
AL.

BUT
SERIOUSLY?
AGAINST
TITANIUM?



THAT
METAL'S WON
EVERY SINGLE
SPORTS AWARD
FOR I-DON'T-
EVEN-KNOW-
HOW-MANY
YEARS NOW!

SHE'S SO
STRONG FOR
HER WEIGHT, SHE
PRACTICALLY
BREAKS THE
LAWS OF
PHYSICS!

WHEN SHE DOES A PUSH-UP,
THE EARTH'S ORBIT SHIFTS. WHEN
SHE THROWS A PUNCH, YOU CAN HEAR
A SONIC BOOM. WHEN SHE WRITES WITH
A PENCIL, THE LEAD TURNS TO DIAMOND.
HER TENNIS SERVES ARE SO FAST, THEY
VIOLATE CAUSALITY. COMPANIES WHOSE
PRODUCTS CONTAIN NO TITANIUM WHAT-
SOEVER ASK HER TO SPONSOR THEM.

I GET IT,
TITANIUM'S A
SUPER-
METAL!

BUT I'M
ALREADY
FASTER THAN
HER! YOU
JUST NEED TO
HELP WITH MY
STRENGTH,
RIGHT?



HMM,
THAT'S
A GOOD
POINT...

ALL RIGHT, AL.
SO YOU WANNA GET
STRONGER?
HERE'S
THE PLAN.



ME...



...AND MANGANESE...



...AND ZINC...



...ARE GONNA TRAIN YOU!!



OKAY,
SOUNDS
GOOD—

LET'S
START
WITH THE
TREAD-
MILL!

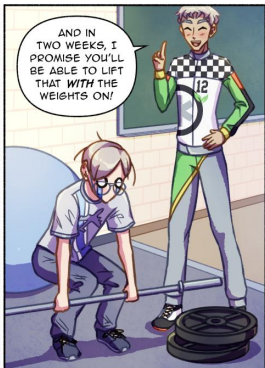
I DIDN'T
MEAN RIGHT
NOOOO!













THIS IS...

...WORSE THAN
GETTING BEAT UP BY THE
RADIOACTIVES...



...BUT BY THE
END OF TWO
WEEKS...



...I'LL BE AS
STRONG AS
TITANIUM!

2 WEEKS LATER



MAGNESIUM,
I'M EVEN SKINNIER
THAN I WAS
BEFORE—



WELL,
CAN
YOU LIFT
THIS?



W-WHAT?!
OF COURSE
NOT!

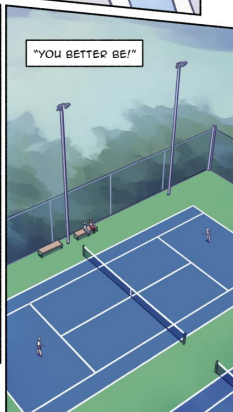


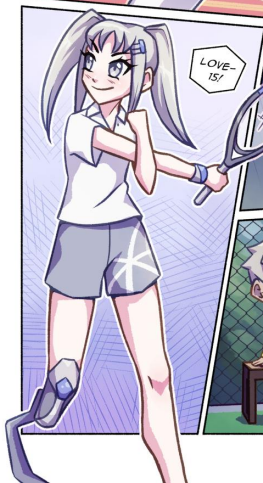
JUST
TRY!

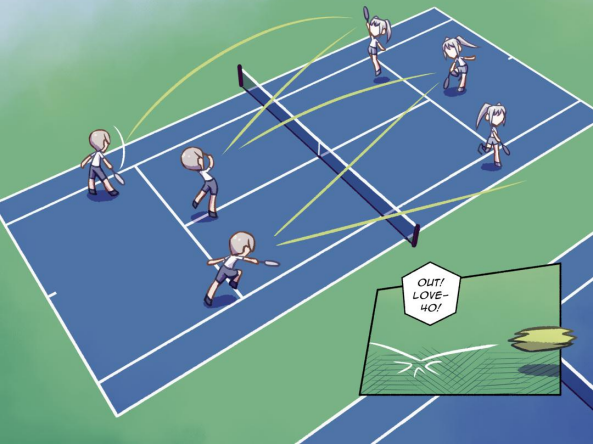


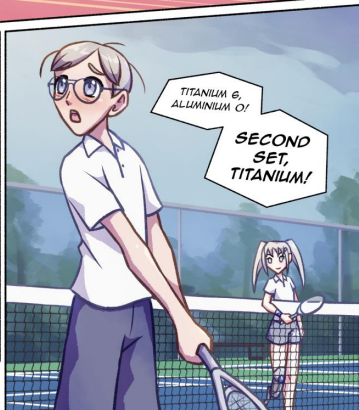
LIFT

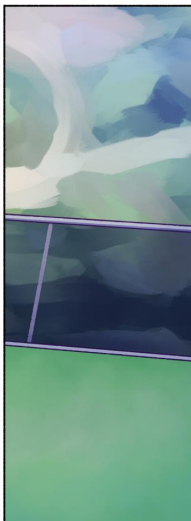
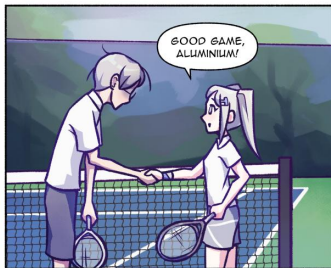


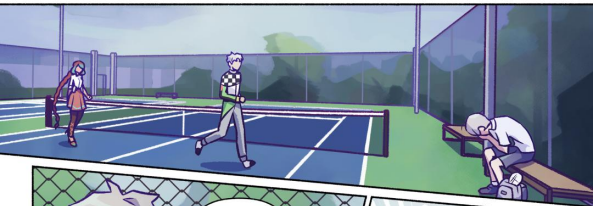


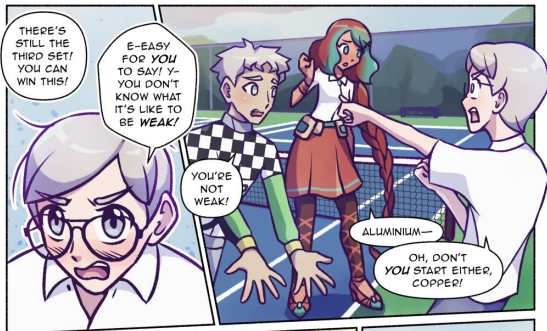
















IT'S
NO
USE...



EVEN AFTER
TWO WEEKS
OF TRAINING,
I'M STILL
WEAKER THAN
TITANIUM.



WHAT IF MY FIRST
WIN WAS JUST A FLUKE?
WHAT IF I GET CRUSHED IN
THE FINAL ROUND? WHAT IF
I GET LAUGHED OFF THE
COURT, OR DROP MY
RACKET, OR—



...WAIT,
WHICH
STAIRWELL
AM I IN?



I CAN'T BELIEVE YOU HAD THE NERVE TO SHOW YOUR SCRAWNY LITTLE SELF AGAIN.

P-PLEASE...
L-LET ME GO...



HEY BOSS, LOOKIT THIS!

THE LIL' GUY THINKS HE CAN PLAY TENNIS!



YOU PLAY SPORTS?

AGAINST WHO, LIGHT-WEIGHT? A TEAM OF HELIUMS?

N-NO!
I'M IN THE FINALS!



I DON'T BELIEVE YA.

LOOK IT UP!



"SET 2
LIVE SCORES:
TITANIUM 6,
ALUMINIUM—"

D-DON'T
LOOK IT UP DON'T
LOOK IT UP

АААААА
 НАНАНА
 НАНАНА
 НАНАНА!

YOU LOST
SIX TO
NOTHING.

YEA

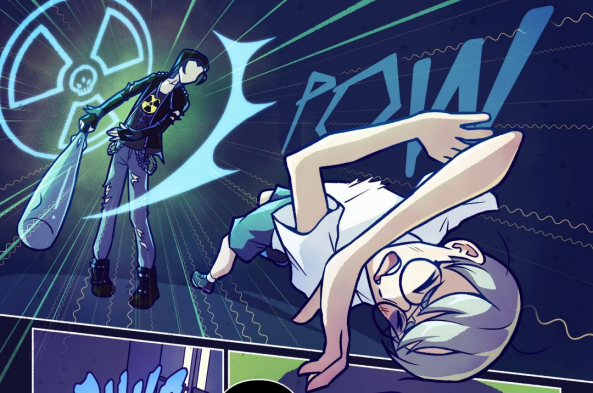
АААААААААААААА

THAT'S
PATHETIC.

HOW'D YOU
GET INTO THE
FINALS?

I-I...





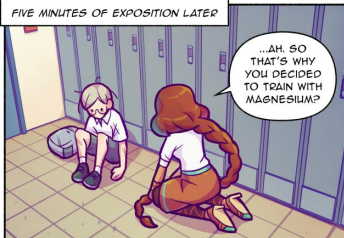
NOW GET LOST. CAN YOU OPEN THE DOOR THIS TIME, OR DO I HAVE TO DO IT FOR YOU?

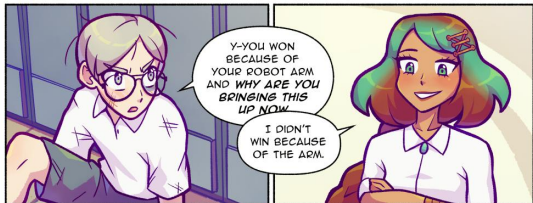
I-I CAN OPEN IT!





FIVE MINUTES OF EXPOSITION LATER







I WAS THE
ONLY ONE
RUNNING.



YOU
KEPT HITTING
THE BALL TO
OPPOSITE
SIDES OF THE
COURT...

YOU WERE
TRYING TO TIRE
ME OUT, AND
IT WORKED.

HOW ELSE WAS
I SUPPOSED TO
BEAT A TENNIS
FINALIST?

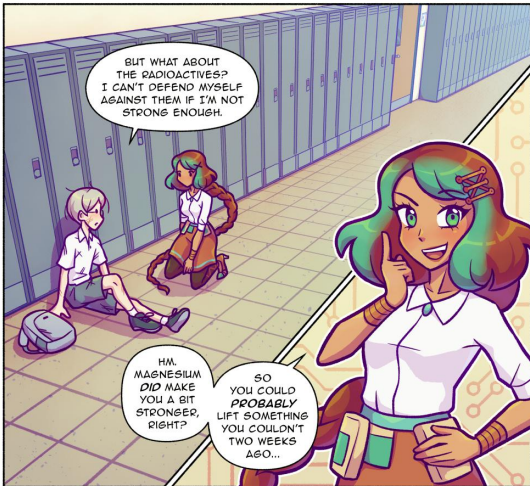
LISTEN,
ALUMINIUM.

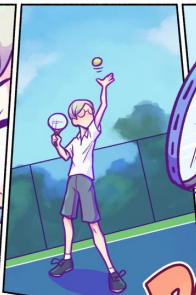
UNFAAIR

I KNOW
YOU'RE
NOT AS
STRONG AS
TITANIUM,
BUT...

...I'VE SEEN
YOU ON THE
COURTS. YOU'RE
A LOT FASTER
THAN HER.

AND IF YOU
CAN TAKE
ADVANTAGE
OF THAT...





POW

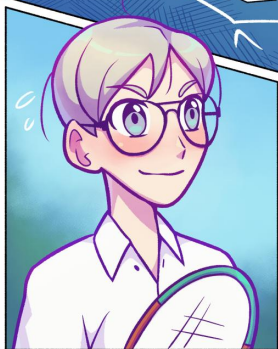
LOVE-15!

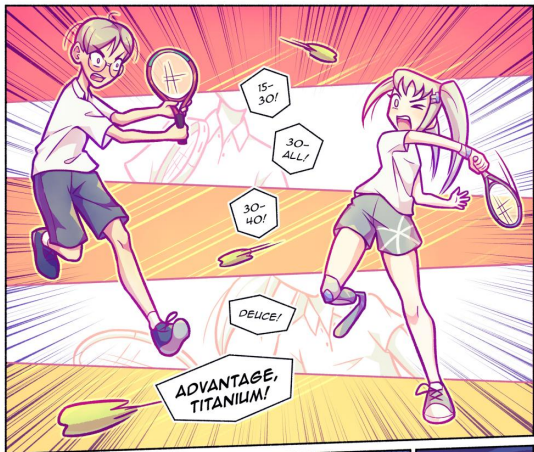


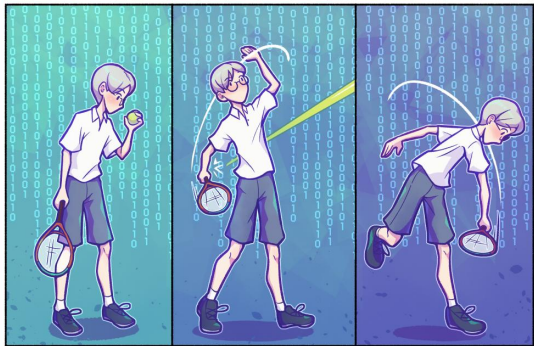


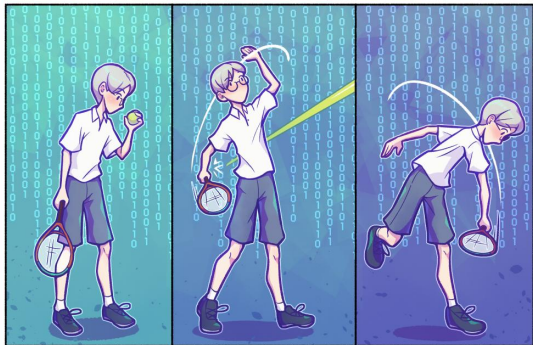
POW

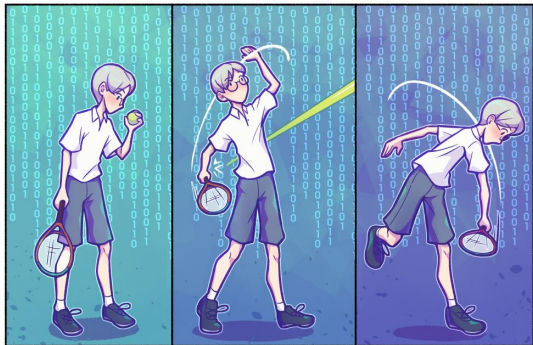
15-ALL!





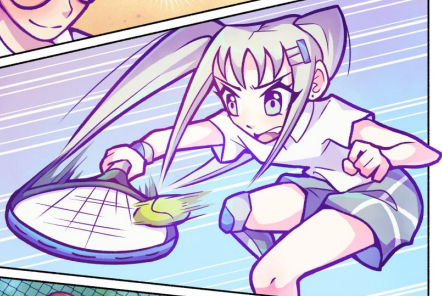








SPEED.



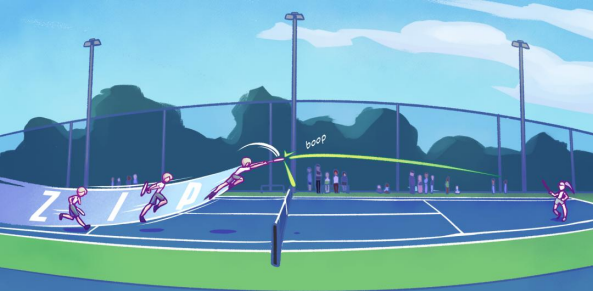
I NEED
TO GET INTO
A POSITION
WHERE I'M FAST
ENOUGH TO GET
THE BALL, BUT
SHE ISN'T.



JUST A
LITTLE BIT
FURTHER...
THEN...

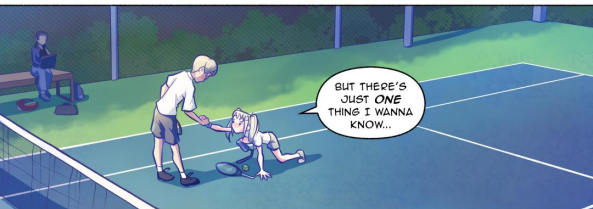
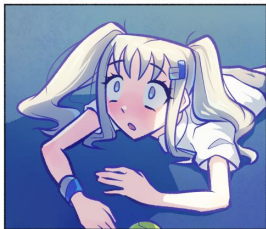
...DOS MOI
PA STO...

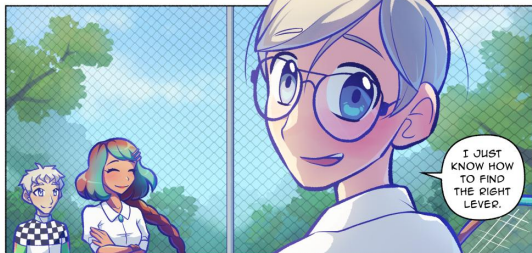
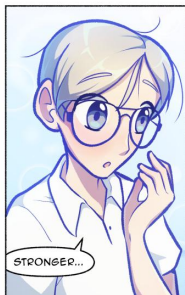
...KAI
TAN GAN
KINASO!!











SOMETIME LATER...



YOU AGAIN,
LIGHT-
WEIGHT?



GEEZ,
HAVEN'T YA
LEARNED YOUR
LESSON?

POLONIUM!
URANIUM!
RADIUM!



CLONK





TENSILE STRENGTH IS THE AMOUNT OF PULLING STRESS A MATERIAL CAN WITHSTAND WITHOUT BREAKING. IT CAN VARY GREATLY DEPENDING ON THE MATERIAL'S IMPURITIES AND HOW IT WAS MANUFACTURED, SO I GOT CONFLICTING RESULTS TRYING TO FIND EXACT TENSILE STRENGTHS FOR THE PURE ELEMENTS. HOWEVER, IT WAS PRETTY MUCH UNIVERSALLY AGREED THAT ALUMINIUM SITS ON THE WEAKER END.



I ENDED UP TAKING THE TENSILE STRENGTHS FROM HOWATSON, LUND, AND TODD'S *ENGINEERING TABLES AND DATA* (3RD ED.), EXCEPT FOR MAGNESIUM'S, WHICH WAS TAKEN FROM THE MATWEB DATABASE.

MATWEB HAS TENSILE STRENGTHS FOR SO MANY MATERIALS! I WAS ABLE TO FIND ALL THE RARE EARTHS ON THERE, AS WELL AS SOME REACTIVE/RADIOACTIVE ELEMENTS SUCH AS SODIUM (15 MPa) AND PLUTONIUM (400 MPa), WHICH I REALLY DIDN'T EXPECT TO SEE! I WAS ALSO ABLE TO FIND DATA FOR DIFFERENT METAL-MAKING METHODS, SUCH AS ANNEALING AND COLD-WORKING.

THEN I GOT IP-BANNED FOR MAKING TOO MANY QUERIES.



FATIGUE STRENGTH (ALSO KNOWN AS **FATIGUE LIMIT**) IS THE AMOUNT OF STRESS BELOW WHICH A MATERIAL CAN WITHSTAND AN INFINITE NUMBER OF CYCLES. IF A MATERIAL DOESN'T HAVE A FATIGUE STRENGTH, THEN ANY AMOUNT OF STRESS, NO MATTER HOW SMALL, WILL CAUSE IT TO BREAK IF APPLIED TOO MANY TIMES. IRON AND TITANIUM HAVE FATIGUE STRENGTHS. ALUMINIUM DOESN'T.



BUT EVEN THOUGH ALUMINIUM IS PRETTY WEAK ON ITS OWN, IT CAN BECOME AS STRONG AS STEEL WHEN ALLOYED WITH OTHER ELEMENTS! **MAGNESIUM, MANGANESE, ZINC, COPPER, AND SILICON** ARE ALL COMMONLY USED IN ALUMINIUM ALLOYS.



BY THE WAY, COPPER'S ROBOT ARM IS REAL! IT'S BASED ON THE **TITAN ARM**, DEVELOPED BY STUDENTS AT THE UNIVERSITY OF PENNSYLVANIA.

IT PROBABLY WON'T MAKE YOU STRONGER THAN "THE TITAN" THOUGH.