

The Blegdamsvej

*Faust*



***The* THREE ARCHANGELS, THE LORD, THE HEAVENLY  
HOSTS, *and* MEPHISTOPHELES**



**ARCHANGEL EDDINGTON**

As well we know, the Sun is fated  
In polytropic spheres to shine;<sup>1</sup>  
Its journey, long predestinated,  
Confirms *my theories* down the line.

Hail to *Lemaître's* promulgation<sup>2</sup>  
(Which none of us can understand)!  
As on the morning of Creation  
The brilliant Works are strange and grand.

**ARCHANGEL JEANS**

And ever speeding and rotating,  
The double stars shine forth in flight,  
The Giants' brightness alternating  
With the eclipse's total night.

Ideal fluids, hot and spinning,  
By fission turn to pear-shaped forms.<sup>8</sup>  
*Mine are the theories* that are winning!  
The atom cannot change the norms.

## ARCHANGEL MILNE

The storms break loose in competition  
(The *Monthly Notices* as well!)<sup>4</sup>  
And burn with violent ambition  
Important tidings to foretell.

At heat of 10 to 7th power  
The gas degenerates in flame,  
Permitting us our shining hour  
Of freest flight in *Fermi's* name.<sup>5</sup>

## THE THREE

This vision fills us with elation  
(Though none of us can understand).  
As on the Day of Publication  
The brilliant Works are strange and grand.

## MEPHISTO

(*springing forward*)



Since you, O *Lord*, yourself have now seen fit  
To visit us and learn how each behaves,

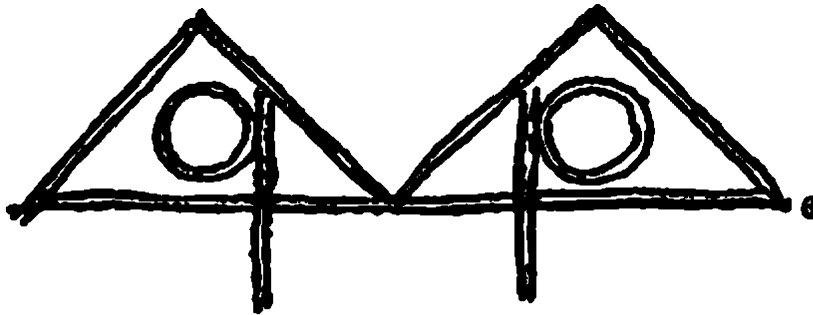
And since it seems you favor me a bit,  
Well—now you see me here

*(turning to the audience)*

among the slaves.

On Stars and Worlds I've nothing for the jury,  
All that I know is how the folks complain.  
To me the theory's full of sound and fury,  
Yet here you are in ecstasy again,  
Approving views that shatter like a bubble,  
Sticking your nose in every kind of trouble.

THE LORD



But must you interrupt these revels  
Just to complain, you Prince of Devils?  
Does Modern Physics never strike you right?

MEPHISTO

No, Lord! I pity Physics only for its plight,  
And in my doleful days it pains and sorely grieves  
me.

No wonder I complain—but who believes me?

THE LORD

You know this *Ehrenfest*? . . .

MEPHISTO

The Critic?<sup>1</sup>

*(A vision of the above appears)*



THE LORD

My knight!

MEPHISTO

Your knight, your slave and henchman. What's your bet?

You still will lose, I warn you, if you let  
Me tempt this knight and lead him far astray.

THE LORD

Oh, this is really dreadful! Must I say . . .  
*Jah, muss Ich sagen.* . . . There is an essential<sup>8</sup>  
Failure of classic concepts—a morass.  
One side remark—but keep it confidential—  
Now what do you propose to do with *Mass*?

MEPHISTO

With *Mass*? Why, just forget it!

THE LORD

But . . . but this . . .  
Is very in-ter-est-ing. Yet to try it . . .

MEPHISTO

Oh, *Quatsch!* What rot you talk today! Be quiet!

THE LORD

But . . . but . . . but . . . but . . .

MEPHISTO

*That's my hypothesis!*

THE LORD

But *Pauli*, Pauli, Pauli, we practically agree.  
There's no misunderstanding—that I guarantee.  
*Natürlich, Ich bin einig.* We might throw *Mass* away  
But *Charge* is something different—why *Charge* just  
*has* to stay!

MEPHISTO

What temperamental nonsense! Why *not* get rid of  
*Charge*?

THE LORD

I understand completely, but *maa jeg spørge*,  
friend,<sup>9</sup>

MEPHISTO

Shut up!

THE LORD

But Pauli, surely you'll hear me to the end?  
If *Mass* and *Charge* go packing, what have you, by  
and large?

MEPHISTO

Dear man, it's elementary! You ask me what remains?  
Why bless me, The *Neutrino!* Wake up and use your  
brains!

*(Pause. Both pace to and fro)*

## THE LORD

I say this not to criticize, but rather just to  
learn. . . .<sup>10</sup>

But now I have to leave you. Farewell! I shall return!

*(He exits)*



## MEPHISTO

From time to time it's pleasant to see the dear Old  
Man,

I like to treat him nicely—as nicely as I can.

He's charming and he's lordly, a shame to treat him  
foully—

And fancy!—he's so human he even speaks to Pauli!

*(He exits)*

# FIRST PART

## Faust's Study





**FAUST**

I have—alas—learned Valence Chemistry,  
Theory of Groups, of the Electric Field,  
And Transformation Theory as revealed  
By Sophus Lie in eighteen-ninety-three.

Yet here I stand, for all my lore,  
No wiser than I was before.

M. A. I'm called, and Doctor. Up and down,  
Round and about, the pupils have been guided  
By this poor errin' Faust and witless clown;  
They break their heads on Physics, just as I did.  
But still I'm better than the cranks,  
The Big Shots, monkeys, mountebanks.

*All* doubts assail me; so does *every* scruple;  
And Pauli as the Devil himself I fear.

I grab the eraser, like a frantic pupil,  
Before the magic X-ings disappear,<sup>11</sup>  
For what is written down on black, in white,  
Is apt to be acceptable and right.

*Du Lieber Gott!* I still could do some teaching.  
I have no *Guth* nor *Breit* here at my side,<sup>12</sup>  
But I could use their aptitude for preaching  
To spread the tested gospel *good* and *wide*.

Not even *Hund* nor *hound* could bear my lot,<sup>18</sup>  
So I'm The Critic, sad and misbegot.

(MEPHISTO bursts in  
like thunder, dressed as  
a traveling salesman)



Why all the noise?

MEPHISTO

I'm at your service, Sir!

FAUST

What do you take me for? A customer?

MEPHISTO

You used to be receptive and urbane. . . .  
These theories nowadays are wrong as rain;  
Therefore I want to show you something higher,  
For with it you can set the world on fire:  
"The Dance of the Golden Calf"—kaleidoscopic—  
*The Radiation Theory* is my topic.



*(Canon, sung by all)*

Born–Heisenberg

Heisenberg–Pauli

Pauli–Jordan

Jordan–Wigner

Wigner–Weisskopf

Weisskopf–Born

Born–Heisenberg<sup>14</sup> *(etc.)*

*(etc.)*

MEPHISTO

These are my own,

Bone of my bone.

Listen how, with spunk and spice,

Precociously they give advice.

Here the width of lines diverges

In the wave-field's vasty length.

*(The MASTER OF CEREMONIES protests by gesture;*

*MEPHISTO repeats)*

Here the width of lines diverges

In the wave-field's loss of strength.

FAUST

Enough! You'll not seduce me. I am cured.

I'll never touch your reprints, rest assured.

MEPHISTO

I'm glad of that.

*(aside)*

*(His argument has pith.*

*The first old man that I can reason with!)*

*(showing his wares)*

A Psi-Psi Stern?<sup>15</sup>

**FAUST**

**No sale!**

**MEPHISTO**

***A Psi-Psi Gerlach?***

**FAUST**

**No sale!**

**MEPHISTO**

**Electrodynamics?**

**FAUST**

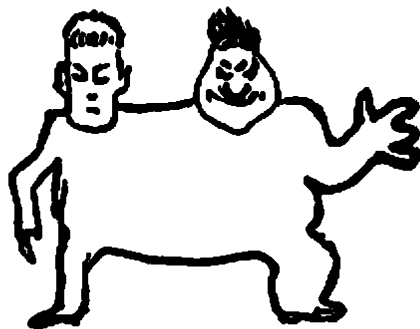
**No sale!**

**MEPHISTO**

***By Heisenberg-Pauli?***

**FAUST**

**No sale!**



**MEPHISTO**

**With infinite self-energy?**

**FAUST**

**No sale!**

**MEPHISTO**

**Electrodynamics?**

**FAUST**

**No sale!**

**MEPHISTO***By Dirac?***FAUST****No sale!****MEPHISTO****With infinite self-energy?****FAUST****The same old story!****MEPHISTO****So I must show you something that's unique!****FAUST****You'll not seduce me, softly though you speak.****If ever to a theory I should say:****"You are so beautiful!" and "Stay! Oh, stay!"****Then you may chain me up and say goodbye—****Then I'll be glad to crawl away and die.****MEPHISTO****Beware alone of Reason and of Science,****Man's highest powers, unholy in alliance.****You let yourself, through dazzling witchcraft, yield****To all temptations of the Quantum field.****Listen! As now the obstacles abate,****You'll know the fair *Neutrino* for your fate!**

## GRETCHEN

*(comes in and sings to FAUST. Melody: "Gretchen at the Spinning Wheel" by Schubert)*



My Mass is zero,  
My Charge is the same.  
You are my hero,  
*Neutrino's* my name.

I am your fate,  
And I'm your key.  
Closed is the gate  
For lack of me.

Beta-rays throng<sup>16</sup>  
With me to pair.  
The N-spin's wrong<sup>17</sup>  
If *I'm* not there.



My Mass is zero,  
My Charge is the same.  
You are my hero,  
*Neutrino's* my name.

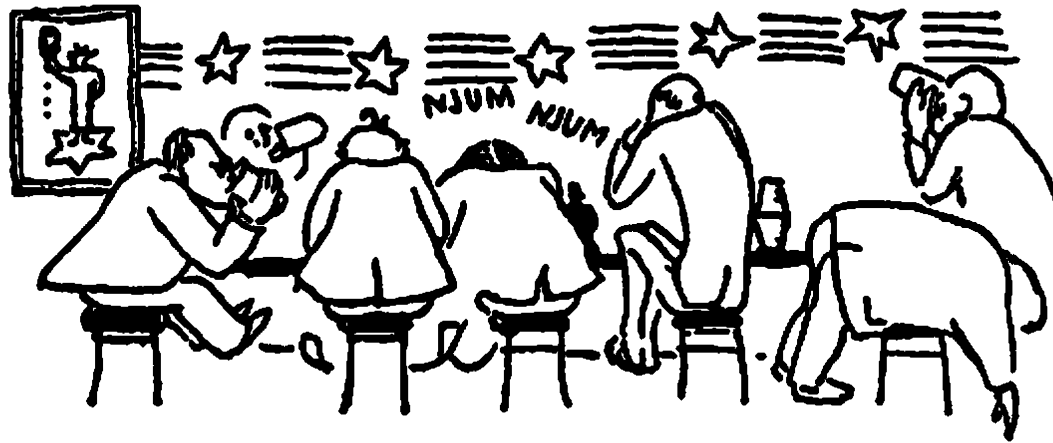
My psyche turns  
To you, my own.  
My poor heart yearns  
For you alone.

My lovesick soul  
Is yours to win.  
I can't control  
My trembling spin.

My Mass is zero,  
My Charge is the same.  
You are my hero,  
Neutrino's my name.

*(Exeunt omnes)*

**MRS. ANN ARBOR'S SPEAKEASY<sup>18</sup>**  
**(otherwise known as Auerbach Keller)**  
**(American physicists sitting sadly at the Bar)**



**MEPHISTO**

**(springing forward behind the bar)**



**Can no one laugh? Will no one drink?  
I'll teach you Physics in a wink. . . .**

**(he winks exaggeratedly and knowingly at the  
physicists)**

**Shame on you, sitting in a daze  
When as a rule you're all ablaze!**



OPPIE

*(swallowing—Njum! Njum!—before speaking)*

Your fault! You've brought no single word of cheer—  
No news, no X-ings. Bah!

MEPHISTO

*(producing GRETCHEN)*

But both are here!



*(Lively applause and general tumult)*

A TALL MAN

A shapely and appealing Signorina. . . .

*(to MEPHISTO)*

But tell me, have you been in Pasadena?

MEPHISTO

With *Einstein*, yes. He greets you in your harbor,  
This *wunder*-bar of Mrs. Annie Arbor.

A TALL MAN

Einstein! His curves! His fields! His whole arena!

MEPHISTO

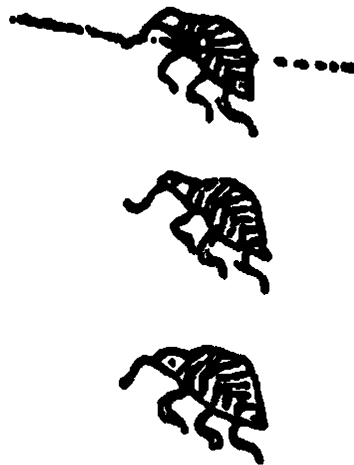
*(sings)*

A *Monarch* cherished dearly  
 A *Flea*, just as a son,<sup>19</sup>  
 And quite as much—or nearly—  
 As Gra-vee-táy-shee-un.

The Monarch summoned *Mayer*,<sup>20</sup>  
 Said Mayer: "To be sure!  
 I'll make him tensors, Sire,<sup>21</sup>  
 With junker curvature."



Attired as a dandy,  
 The Flea was then displayed.  
 Folks ate him up like candy  
 So sweetly was he made.



The Flea grew up, and later  
 His *Son* was born. The son<sup>22</sup>  
 Kept challenging his pater  
 But never got to run.

$$\underline{\Gamma}_{st}^i = \Gamma_{st}^i + \Gamma_{st,r}^i \otimes r$$

$$\int \mathcal{M}_i \otimes^i d\tau$$

$$\mathcal{G}^{\text{is}} \nabla_s = 0$$

Half-naked, fleas came pouring  
 From Berlin's joy and pride,  
 Named by the unadoring:  
 "Field Theories—Unified."

Now, Physicists, take warning,  
 Observe this sober test. . . .  
 When new fleas are a-borning  
 Make sure they're fully dressed!

ALL

Drunk though we are, we feel as fine  
 As—hic!—five hundred female swine!

FAUST

*(known to be opposed to alcohol, steps forward and sings)*



(to MEPHISTO)

Do you expect me to get well  
In all this chaos, din and hell?

(to GRETCHEN)

You Skeleton, you Monster, here I stand,  
But do you recognize your lord and master?  
What holds me back? See here, I take your hand  
And *shatter* you!

GRETCHEN

Faust, Faust, I fear disaster!

(*Exeunt omnes*)

## **SECOND PART**

### **A Charming Region**

**(FAUST sleeps, on a bed of roses. A plum tree grows,  
to the right. A terrific din announces the approach of  
the MILLIKAN-ARIEL)**



**MILLIKAN-ARIEL**

**(from above)**

**Hear, oh hear the words of rubes  
(Wilson Chambers, Counting Tubes)!<sup>23</sup>  
Thundering, for the spirit's ear,  
*Cosmic Rays* will now appear!  
The protons are creaking and chattering,  
Electrons are rolling and clattering.  
Light comes rushing—whither? whence?  
*Heisenberg* is really grumpy;<sup>24</sup>  
*Rossi, Hoffmann*—both are jumpy.<sup>25</sup>  
All this nonsense makes no sense!**



**FAUST**

*(awakening)*

Sweet rosy field—what soil am I caressing?  
And why familiar? *Rosenfeld*, they say,<sup>26</sup>  
To the greengauge invariant gives a blessing.<sup>27</sup>  
This is his plum.

*(MASTER OF CEREMONIES appears)*

*(to the M.C.)*

What's going on today?

**M.C.**

Walpurgis Nights: the *Classical Poetical*,  
And afterwards, the *Quantum Theoretical*.

**FAUST**

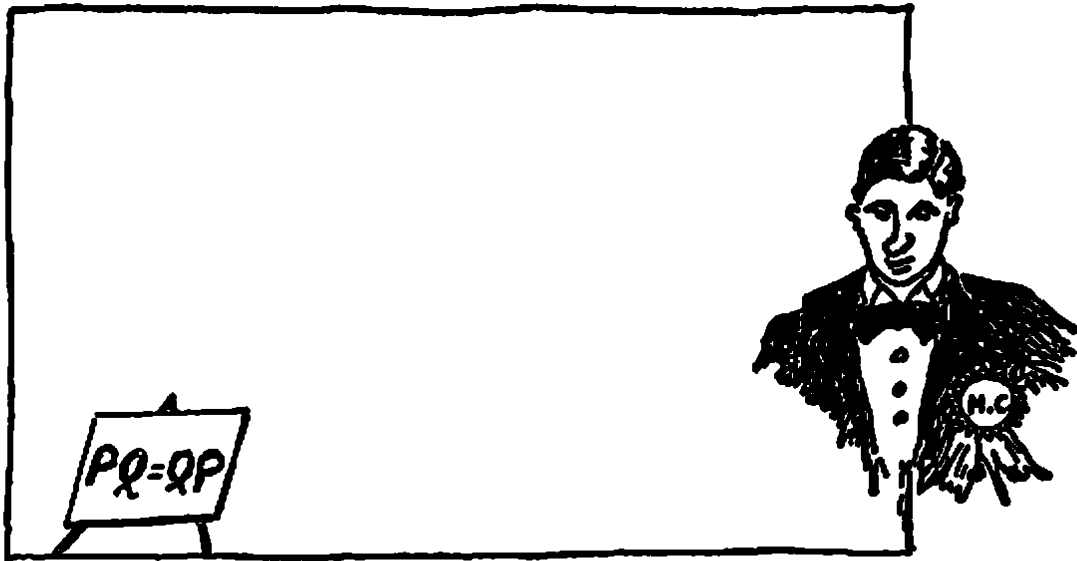
Excellent! I quite agree!

## THE CLASSICAL WALPURGIS NIGHT

**M.C.**

*(makes a gesture of presentation)*

The Classical—a potpourri!



**FAUST**

*(He leans forward, expecting. A long pause indicates that nothing is happening)*

**But nothing's happening!**

**M.C.**

**Just wait and see!**

**FAUST**

*(He waits. Another long pause and again nothing happens)*

**See here now, Delbrück! . . .**

**M.C.**

**Faust, you must expect  
That with the Classical there's no effect  
Upon the audience.**

*(DIRAC enters)*

**DIRAC**

**Correct! Correct!**

**FAUST**

**Why not skip this, and go to the Q.-T.?**



M.C.

If we do that, I fail as an M.C.,  
For first the Classical must duly close.

FAUST

I have two different time-scales to propose  
For these Walpurgis Nights. As I've avowed,  
The First should go to limbo.

DIRAC

Not allowed!

FAUST

I then propose the Classical be moved  
Much farther back in time and place.

M.C.

Approved!

## THE QUANTUM THEORETICAL WALPURGIS NIGHT

*(At one side of the stage, to the back, THE LORD and  
LANDAU<sup>28</sup> appear, the latter bound and gagged)*



THE LORD

Keep quiet, *Dau!* . . . Now, in effect,  
The only theory that's correct,  
Or to whose lure I can succumb  
Is

LANDAU

Um! Um-um! Um-um! Um-um!

THE LORD

Don't interrupt this colloquy!  
*I'll* do the talking. *Dau*, you see,  
The only proper rule of thumb  
Is

LANDAU

Um! Um-um! Um-um! Um-um!

*(At the other side of the stage, to the back, appears  
the face of GAMOW, through bars)*



GAMOW

I cannot go to Blegdamsvej  
(Potential barrier too high!).  
This "conversation" is the hoax—  
The Lord, he really make the joke.  
Bounded and gaggled, mouse to toe,  
Dau can't say "*Nyet!*" nor "*Horoshol!*"

M.C.

*(center stage)*

Be careful! *Achtung!* Watch it! These *Holes* of P.  
Dirac<sup>29</sup>  
Can trip you in a second and flip you on your back!  
*(He puts up a "Warning!" sign)*

THE MONOPOLE

*(steps forward and sings)*

Two Monopoles worshiped each other,<sup>30</sup>  
And all of their sentiments clicked.  
Still, neither could get to his brother,  
Dirac was so fearfully strict!



*(to the M.C.)*

But tell me—(Watch it! There's a Hole!)  
Where is my darling *Antipole?*

M.C.

*(aside)*

*(A Hole! My foot! More like a crater!)*

*(to the MONOPOLE)*

Now just a minute—Here comes Slater.

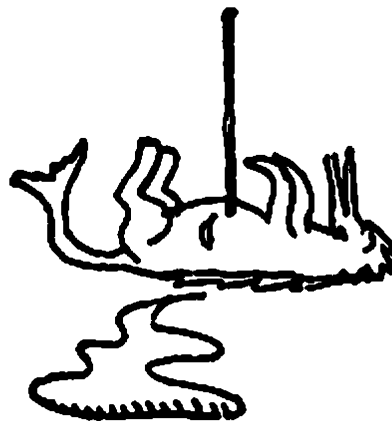
*(SLATER steps forward with a bloody lance and THE GROUP DRAGON)<sup>31</sup>*



M.C.

*(observing the characters running about on the stage)*

Why do they run? Why does he roll?  
 Who stabbed him with the bloody pole?  
*Group Dragon*, by this mortal blow  
 We laid you low!



Scaly with indices is he  
 Who died of Anti-symmetry.