Two Rumps

Tutor: I’ve been reading a bit.

*Student: Oh?*

Yes.

*What about?*

About the railways in America.

*The railways in America?*

Yes.

*Why?*

Fun, I guess.

*Fun?*

Yes.

*And is it?*

Fun? Yes, kind of.

*What have you been reading?*

Well, about the American railways and the space shuttle.

*The American railways and the space shuttle?*

Yes.

*How come?*

Well, I came across this article.

*About the American railways and the space shuttle?*

It was interesting.

*What was so interesting about it?*

Well, it was history.

*History?*

It was quite funny, too.

*Funny?*

Yes. Sort of.

*The history of the American railways?*

Sort of.

*And what did it tell you?*

Well, it was about how the standard gauge was decided.

*The standard gauge?*

Yes.

*That doesn’t sound very interesting.*

No, I suppose it doesn’t.

*Not at first, maybe.*

It was quite funny.

*Funny?*

Yes.

*How can the history of the American railways be funny?*

Well, it was about the standard gauge.

*And this was funny, was it?*

Well…

*First of all, can you tell me something?*

OK.

*What is the “standard gauge”?*

OK. The standard gauge is the distance between the rails.

*How far apart the rails are, you mean?*

Yes.

*That’s basic, isn’t it?*

Absolutely basic. Everything will follow from that.

*Absolutely everything.*

The size of carriages…

*Stations…*

Engines…

*Bridges…*

Tunnels…

*Everything.*

Everything follows from the guage.

*And how far apart are the rails in America?*

What is the US standard railway gauge, you mean?

*Yes.*

Four feet, eight and a half inches.

*Four feet, eight and a half inches?*

Exactly.

*That's a very odd number.*

It is, isn’t it?

*Why was that gauge used?*

Because that's how they built them in England.

*Four feet, eight and a half inches apart.*

Four feet eight and a half inches.

*But why did they build them like that in America?*

Well, because people from England built the American railways.

*OK.*

That’s why.

*But why did the English build them like that?*

Because the tramways were built like that.

*Tramways?*

In England.

*What have tramways got to do with it?*

Well, there were trams in towns

*Before there were railways.*

Yes.

*Right.*

So a lot of track was already laid for trams.

*Right.*

They already had the equipment for laying tramways.

*I suppose so.*

Like jigs.

*Jigs?*

Templates.

*Templates?*

Templates for setting the rails the right distance apart.

*Four feet, eight and a half inches?*

Yes.

*But why did they build the railways exactly like the tramways?*

Because they had all that equipment.

*OK.*

Shame to waste it…

*So the jigs were set at four feet, eight and a half inches?*

Exactly.

*OK. But where does the standard gauge come from?*

Four feet eight and a half inches?

*Yes. Why that distance?*

They used the same equipment for tramways as they had used for wagons.

*And I suppose you’re going to tell me that wagons all used that gauge.*

That’s right.

*Oh.*

Wagon wheels were usually set four feet, eight and a half inches apart.

*Why?*

They had to be.

*But why?*

Well, if they used any other gauge the wheels would break.

*Break?*

Well, come off.

*Why?*

On the old roads.

*But why?*

Because there were deep ruts all along those roads.

*Don’t tell me …*

What?

*These ruts were four feet, eight and a half inches apart, right?*

Just so.

*Always four feet, eight and a half inches apart?*

Always four feet, eight and a half inches.

*Why?*

Because they were made by Roman chariots.

*Roman chariots?*

Yes.

*How do the Romans come in?*

The Romans built a lot of roads.

*Well, yes. They did.*

Usually dead straight.

*You can still see them.*

If you look on the map.

*Yes. Dead straight roads. There always old Roman roads.*

And their chariots made ruts in the road.

*Roads were really tracks in those days.*

They were.

*Muddy tracks.*

So ruts formed.

*The tracks got worn, I suppose.*

Yes, they did.

*By all those chariots.*

Yes.

*And then wagons.*

The ruts got quite deep.

*And they were always the same distance apart, I suppose.*

The same distance apart as the wheels of a chariot.

*Or wagon.*

Exactly.

*How wide is four feet, eight and a half inches in metric?*

It’s a bit over one metre forty.

*OK.*

Just over one metre forty.

*Why were chariots’ wheels always that distance apart?*

Well, chariots were pulled by two horses.

*So?*

So they were made as wide as two horses’ rumps.

*Because they were always pulled by two horses?*

Pretty much.

*So the ruts were always about two horses’ rumps apart.*

Four feet, eight and a half inches.

*And everyone else had to match their wagon wheels to the ruts?*

You got it!

*Their wheels would break off if they didn’t, I suppose.*

Yes. The ruts were sometimes really deep.

*So the American standard railway gauge is based on English Railways.*

Yes.

*And the English standard railway gauge is based on tramways.*

Yes.

*Which is based on English wagons.*

Yes*.*

*Which were based on the ruts on Roman roads.*

Yes.

*Which were made by Roman chariots.*

Yes.

*Which were as wide as two horses’ rumps.*

*Yes.*

*So the American railways gauge is really based on Roman horses’ rumps!*

Yes, it is.

*Very odd.*

It is, isn’t it?

*Very.*

But there is a funny twist to this story.

*I wondered when we would get to the funny bit.*

Have you seen pictures of the space shuttle?

*Yes, of course I have.*

Well, you’ll have seen that there are two booster rockets.

*On the sides of the main fuel tank?*

Long white booster rockets.

*One on each side of the big fuel tank.*

Yes.

*OK.*

These are solid rocket boosters, or SRBs.

*And?*

Well, the SRBs were made in the state of Utah.

*Utah?*

Yes.

*But the space shuttle flew from Houston.*

Yes.

*Houston’s in Florida.*

Yes.

*Which is miles from Utah!*

Hundreds of miles.

*Right.*

The SRBs were made a long way from the space centre.

*So they had to be shipped there?*

Yes.

*By rail?*

By rail.

*I think I can see where this is going!*

The people building the SRBs had a problem.

*Oh?*

They wanted to make the SRBs much wider.

*Why?*

Because they would have been better rockets.

*So why didn’t they just do that?*

Because they couldn’t.

*Why couldn’t they?*

Because the SRBs had to be shipped by rail.

*From Utah to Florida.*

Exactly.

*So they had to fit the railway.*

Well, yes.

*OK.*

The railway line runs through a tunnel.

*OK.*

In the mountains.

*Right.*

And the SRBs had to fit through that tunnel.

*OK.*

Which was never more than twice the standard gauge wide.

*Twice four feet eight and a half inches.*

Two roman horses’ rumps, twice. Around 2 metres eighty centimetres.

*So the SRBs can’t be wider than four horses’ rumps!*

Maximum.

*Crazy!*

So the width of the SRBs was decided over two thousand years ago.

*By Romans.*

Well, by Roman war chariots.

*Which were always just as wide as two horses’ rumps.*

I wonder what the Romans would think of all this?

*If they knew, you mean?*

If they could come back today.

*It would probably make them laugh.*

They’d be amazed, too.

*That we can ride a shuttle into space?*

They’d be amazed.

*Gobsmacked.*

They wouldn’t be able to believe it.

*No. Probably not.*

They’d be interested in the technology.

*The people who built the chariots?*

Yes.

They’d be amazed that the size of their chariots made such a difference.

*Yes.*

It’s all very strange.

*Yes.*

And quite funny.

*I suppose it is.*

In a way.

*Yes, in a way.*

I’m thirsty.

*Me too.*

Shall we have a cup of tea?

*Why not?*