hours and errors. The flawless mathematical tables it can produce by the simple turn of a crank will revolutionize navigation, industry, finance. All made better, faster, more perfect. I can bore you with the technical details, but for those ready to get back to dancing, know this… When it is manifest, and soon it will be thanks to your government's generous funding, the world will know a new way of knowing.

Start

Now someone should hand me my rum so I stop ruining a perfectly good party.

Ada runs up through the "crowd."

ADA. Mr. Babbage. Hello. Your machine. May I ask what order of polynomial it can manage?

CHARLES. Certainly, my dear. This model can process to the third.

ADA. *(Disappointed.)* The 3rd? Oh.

CHARLES. Well. This is just a model. A fragment. The final engine can evaluate to the seventh.

ADA. A seventh order? Well that's more impressive isn't it.

CHARLES. I certainly think so. And if you care to know, the final engine would have thirty-one-digit accuracy.

ADA. *(Like "what a great song!")* Thirty-one? What a prime. I do so love primes, don't you? Lonely odd little things.

CHARLES. A description usually reserved for inventors like myself.

ADA. Oh you are no lonely inventor, Mr. Babbage. You are a titan of intellect. A genius. Are you not…*that* Mr. Babbage?

CHARLES. My pride would like to say yes but my propriety must decline that very kind praise. Did you mention your name, my dear?

ADA. No.
Which arithmetic processes does the engine employ for calculation. Does it multiply?

CHARLES. Oh no. A machine that could multiply is a far-fetched thing. The complexity would overwhelm any engine. No, the Difference Engine employs a quite useful pattern for calculating the value of a polynomial using *only addition*. The method—

ADA. The Method of Finite Differences. That's brilliant. You can use repeated addition to calculate the whole series. Well done, sir. I have

heard many times of your great mind and I finally see its description was accurate.

CHARLES. That is too kind of you, miss.

ADA. It's not kind, it's true. You know some people mistake charm for brilliance. I don't.

CHARLES. That's a welcome quality in a lady. It should keep you out of trouble.

ADA. It hasn't yet. I think we should be friends.

CHARLES. Then I think we should meet. Officially. Charles Babbage.

ADA. Of course I know you. And your work. And now your house, thank you again for the party.

CHARLES. And your name, my dear?

ADA. *(Tries not to mentioned the "Byron" part.)* Oh. Well. I'm Ada… Byron.

CHARLES. Ada whom?

ADA. Byron.

CHARLES. Byron?

ADA. Not that Byron.

CHARLES. *Lord* Byron?

ADA. *No.*
(Caught.) Yes.
Excuse me.

She starts to go, stopped by his—

CHARLES. You're Mary Sommerville's friend. The young mathematician?

ADA. That I am.

CHARLES. She speaks very highly of you. She doesn't do that about many people.

ADA. Not many people deserve her praise.

CHARLES. Indeed. A pleasure to make your acquaintance, Miss Byron.

ADA. I'm am confident that my pleasure is greater. *(Switching from flattery to business a bit too quickly.)* It seems to me that the hardship

of producing useful mathematical tables is accounting for human error in the *transcription* of them. I find mountains of errors constantly, and I imagine it's not the *computation* that is incorrect but the *copying*.

CHARLES. The copying, yes, exactly my thought. Which led me to a simple solution for eliminating such error.

ADA. Corporal punishment.

CHARLES. No. A printer.

ADA. *(Like it's a foreign word.)* A printer?

CHARLES. Automatic and attached. All the values are recorded directly after calculation—pressed into clay—by the machine itself. No man's hands touch them which means—

ADA. Error-free calculating. Mr. Babbage. You know you might've just become, in this very moment, the single most interesting person I've ever met.

CHARLES. How old are you, Miss Byron?

ADA. Eighteen.

CHARLES. Then you've got time yet to find better.

ADA. Or perhaps I'll just have to get to know you...better.

    "Is she flirting?" he thinks. "Am I flirting?" she thinks.

May I write to you? I tend to be presumptuous but you see I'm terribly good at maths and terribly bored with everything else and I sense your depth of wisdom and if you would accept my correspondence I would be most excited—Of course I understand if you are busy, which of course you are. And I am a girl of little use to you, of course I am.

CHARLES. No, my dear, no. I will admit that I do not often say this to many eighteen-year-old...socialites, but I very much look forward to our conversation. Many of them.

ADA. Yes, many. Please many.

    Another pause.

Also I play piano. I'm quite good.

CHARLES. Is that right?

ADA. Yes. Music and mathematics share a language I find. Though

I also find a kind of delicious magic in music. Its ability to transport one to a most free and full place of feeling with just a few bars. I will not deny that I live for the times when I am either at my desk in study or at the keys in song. All else fades away. Freedom can look quite caged from the outside, but it's really in the mind, don't you think?

> *That's it. He likes her very much.*

ANABELLA. *(Off.)* Ada, my dear?

ADA. Oh god.

CHARLES. Is someone calling you?

ADA. My mother. I'm off-script. Dance with me.

CHARLES. Dance with—? I don't think that's very—

> *Ada pulls Babbage into a waltz. With no music.*
> *As Anabella enters...*

ANABELLA. Ada, darling—

ADA. Here, Mother. Dancing. Just dancing.

> *Anabella sees her daughter dancing with the host. Silently.*

ANABELLA. I do believe you're missing a key element of the waltz.

CHARLES. Indeed we are. You must be—

ADA. The music is in our minds, Mother. An experiment in timing.

> *Babbage stops dancing.*

CHARLES. You must be Lady Byron. Good evening.

ANABELLA. Good evening to you, sir and I apologize for the experiment my daughter inflicts upon you, our generous host.

CHARLES. Not at all, Lady Byron. I am in your debt for the company. Your daughter is a compliment to your tutelage and taste, madame.

ANABELLA. That is very kind praise. And I am terribly sorry to leave you but— *(To Ada.)* Lord Lovelace has requested a dance, Ada.

ADA. Oh. Who?

ANABELLA. *Lord* William Lovelace, and you have accepted his request—

ADA. Have I?

ANABELLA. and Mr. Babbage has an entire house of guests to attend to.