My Dear Michael,

Jim Watson and I have probably made a most important discovery. We have built a model for the structure of deoxy-ribose-nucleic-acid (read it carefully) called D.N.A. for short. You may remember that the genes of the chromosome, which carry the hereditary factor, are made up of protein and D.N.A.

Our structure is very beautiful. D.N.A. can be thought of roughly as a very long chain, with flat, but stiff, sticking out. We shall call these bits bases. The model is rather basic.
Now we have two sides of the chain, each made up of sugar and phosphorous, and so on.
The model looks much nicer than this.

Now the exciting thing is that while there are 4 different bases, we find we can only use certain pairs of them together. The bases have names. They are Adenine, Guanine, Thymine, and Cytosine. I will call them A, G, T, and C. Now we find that these 6 pairs...
We can make which have one base from one chain joined to one base from another, as only A with T
and G with C.

Now on one chain, as far as we can see, one can have the bases in any order, but if the order is fixed, then the order on the other chain is also fixed. For example, suppose the first chain goes... then the second must go

<table>
<thead>
<tr>
<th>A</th>
<th></th>
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<th>T</th>
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</thead>
<tbody>
<tr>
<td>T</td>
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<td>A</td>
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<td>C</td>
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<td>T</td>
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<td>A</td>
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</tbody>
</table>
It is like a code. If you are given one set of letters you can write down the others.

Now we believe that the D.N.A. is a code. That is, the order of the bases (the letters) makes one gene different from another gene (just as one page of print is different from another).

You can now see how Nature makes copies of the gene. Because if the two chains unwind, they make another chain to come together on it, then make another chain to come together on it, then because A always goes with T, and G with C, we shall get two copies where
we had one before.

For example

\[
\begin{align*}
A &- T \\
T &- A \\
G &- C \\
T &- A \\
\end{align*}
\]

\[
\begin{align*}
A &- T \\
T &- A \\
C &- G \\
A &- T \\
G &- C \
\end{align*}
\]

\[
\begin{align*}
T &- A \\
A &- T \\
G &- C \\
T &- A \\
C &- G \\
A &- T \\
A &- T \
\end{align*}
\]
In other words, we think we have found the basic copying mechanism by which life come from life.
The beauty of our model is that the shape of it is such that only these pairs can go together, though they could pair up in other ways if they were floating about freely. You can understand that we are very excited. We have to have a letter off to Nature in a day or so.

Read this carefully, so that you understand it. When you come home we will show you the model.

tons of love,

Daddy