

have any peculiar methods of working. I have several rules; one is to go to bed early and stay there as long as I can, another is to eat well and to take plenty of time to it, and a third rule is to get in as much time for amusement as I can. What I have left after this I use for my work."

This statement of Prof. Newcomb as to amusement, however, should be taken with a grain of salt, for what may be amusement to him would be hard work for many other men. For instance, not long ago he referred to astronomy as his profession and political economy as his relaxation. He has written some very important works on political economy. In 1865 he published a book entitled "A Critical Examination of our Financial Policy," in 1877 his "A, B, C of Finance" had a large sale and his book on "Political Economy," published in 1886, is used in some of the schools. He has written other school books of various kinds, and a year does not pass that he does not give one or more scientific addresses. Mr. Newcomb says that at times in his life he has worked very hard. Said she: "When he was computing the changes of the moon he would often keep on until he was tired out, when he would say, 'I must have a nap before I can do anything more. Wake me in fifteen minutes!'" He would then lay his head on the table and go to sleep. Sometimes he has slept that way with his head on my shoulder, going back to his calculations after a few moments' rest."

As a rule, however, Prof. Newcomb is very careful of his habits. He goes to bed regularly, and when his hour for retiring comes he excuses himself, no matter who may be calling upon him. For years his nights were spent at the observatory, and he has had to adopt the most rigid rules to preserve his health.

When Prof. Newcomb was very young man he discovered that the calculations of the astronomers as to the movements of the heavenly bodies were based upon wrong premises, and could not be accurate. In order for any good work to be done the researches and work of years would have to be gone over and made right. This work was so enormous that anyone else would not have dared to attempt it. Prof. Newcomb not only attempted, but carried it out. He was in Europe engaged in examining the records of the great observatories at the time of the Franco-Prussian war, and at its close went to Paris to make his calculations there. He entered the city just at the end of the siege, Mrs. Newcomb being the first English woman to come to Paris after its capitulation. Then the horrors of the commune came on, and for six weeks Prof. Newcomb figured away in the observatory. Part of the time the windows were rattling with the fire of the musketry outside, and in going to the observatory he had to pass the barricades in the streets. Think of figuring amid such surroundings. Think also of the power of concentration of mind needed to do the figuring required. The observations he used for his work were those of the astronomers running back through a period of 200 years. He had to go over their calculations to see if they were correct. He had to see if the clock they used was right, by estimating from the position of the stars what the time must have been to a second, for a clock five minutes out of the way would have made all of his work useless. As an example of his skill in such work he was not long ago looking over an eclipse observed somewhere in the northern Pacific about 100 years ago by some Russian astronomers, when he said: "That must be wrong. Their watches must have misled them!" and upon figuring he found

that they had made the mistake of a day in the date of their observations.

When I asked Prof. Newcomb as to the danger of his work in Paris at the time of the commune, he said it had been much overestimated, and that he was not at all molested there during his labors.

I asked him if he enjoyed mathematical calculation.

He replied: "Did I not, I should never have made it my life work."

Prof. Newcomb probably knows as much about telescopes as any man on earth. It was he who superintended the construction and mounting of the great telescope of our naval observatory in 1873. This telescope had a diameter of 26 inches, and it was for some years the largest telescope of the world. Later on the Russian government wanted a telescope. Arrangements were pending to ward the making a contract for its construction in Europe, when the Russian commissioners sent to the United States to get the advice of Prof. Newcomb. He replied that the best telescope maker living was in the United States, and the result was that the commissioners came here, and Mr. Newcomb introduced them to Alvin Clark. He supervised the contract and the making of the great telescope which they then ordered. For his services in this work the czar sent Prof. Newcomb a magnificent jasper vase on a pedestal of black marble. This vase now stands in the parlor of Prof. Newcomb's home, and he seems more proud of it than of his monument in the adjoining library, consisting of volumes upon volumes of books and tables of which he is the author.

It was Prof. Newcomb who superintended the mounting of the Lick telescope, and he will, I am told, make an address at the coming celebration of the putting up of the Yerkes telescope during the present month.

I asked Prof. Newcomb whether the United States could keep its reputation as the maker of the best telescopes now that Clark had died.

He replied: "Who can tell? It may be that we shall turn out as good instruments as in the past. Brashear of Pittsburg is making as fine glasses as any Clark has made, and there are now other places where good lenses are ground. There are now also some good telescope makers in Europe."

"What are the qualities needed in a good telescope maker?" I asked.

"There are many things," replied Prof. Newcomb. "I sometimes think that the successful man in this, as in some other profession, is born, not made. He must have the most delicate perceptions, and must be accurate in his calculations. There are parts of a lens which must not vary the one-hundred thousandth—I might almost say, the one-millionth—of an inch in thickness. The glass must be of the purest quality, and it must be ground just so. Mr. Clark was a genius in such matters. He began life as a portrait painter and made small telescopes for amusement. He soon began to grind lenses for a livelihood, and it was found that his lenses were the best that were made. He went on until in this branch he surpassed every one else."

"But, professor, is it easy to tell whether a telescope is correctly made?"

"Yes; all you have to do is to look through it at the stars. If they are clear points of light the glass is good; otherwise not."

"Does the difference in the size of the diameter make much difference in the power of the instrument?"

"Yes, the greater the diameter the higher the power."

"What astronomical work are you now engaged upon?" I asked.

"I am going over my tables of the

planets. I shall finish my work of their revision within a few weeks."

"It seems to me, professor, that you have done enough to take a rest the remainder of your life. How long do you expect to continue working?"

"I cannot tell," was Prof. Newcomb's reply, "I shall keep on until I stop. I enjoy my work and I hope to do a great deal more of it."

"Is there much original work now being done in astronomy?"

"Yes, indeed. Good work is being done all over the world. There are more good astronomers now than ever before. One of the great troubles I found in making my computations for the Nautical Almanac years ago was that I had to do all the work myself. Now there are many men who can make such computations. In my recent work I have been helped by my assistants at the observatory. Indeed they should have a part of the credit for much that I have done."

"Do you think that we will ever know much more than we now do about the stars?" I asked.

"Yes, we are learning more right along."

"Is there any good reason to think that the stars are inhabited?"

"That is a question," was the reply. "There is no proof that some of them may not be. There are some of the planets, such as Mars, which we are led to believe have all the conditions which would make life upon them possible. Whether there are beings upon them we do not know, and if there are we do not know if such beings are like ourselves."

FRANK G. CARPENTER.

JENSON'S TRAVELS.

Saturday, June 27, 1897.—After lying at anchor for about four hours of Tyre, we resumed our journey soon after midnight, and at 4:30 a. m. anchor was cast off Haifa, after sailing 87 miles from Beyrout and 35 miles by sea from Tyre. Haifa, situated at the foot and on the north slope of Mount Carmel, appears most picturesque and pleasing to the eye, as one approaches it from the sea side. At 5:15 a. m. I landed and walked about half a mile to the German colony, where I had no difficulty in finding the only family of Saints residing here, namely Jacob Hilt and wife, with whom the Elders from Zion, when visiting Haifa, have made their home of late; here I also met Johann George Gran, who has been in Utah, from whence he came with a missionary license, but is now attending to temporal duties connected with his property in Haifa. He lost his wife several years ago. Sister Caroline Hilt and Sister Christine F. Kegel are the only two other Saints in Haifa, making five members altogether. Of the twenty-three persons baptized in Palestine since the mission was first opened up here in 1886, ten have emigrated to Zion, four have died, two are now living at Yafa, and four in Haifa, besides Bro. Grau who has returned; two have removed to Alexandria, Egypt, and one to Malta. Though neither of the five members in Haifa could talk or understand English, I got along with them remarkably well, my very limited knowledge of German again doing excellent service. Brother and Sister Hilt made me welcome to their hospitality—something that I appreciated highly, as they were the first Saints I had met with since leaving Australia. During my stay Mr. Grau was also very attentive to my wants and accompanied me on my short excursions to the different points of interest in and around Haifa.

Haifa is picturesquely situated on the south angle of the bay of Acre, and at the base of Mount Carmel. Between the shore and the mountain is