P R O B. XXIX.

To find the Antipodes.

There are three ways, but the two best are these :

1. Bring London to the north verge of the Horizon, which is done by flipping the globe up and down till London lies close to the edge of the Brazen Meridian, and close to the Horizon on the north : this being done, look on the fouth verge of the Horizon close to the Brazen Meridian, and there make a dot on the globe, and you have the Antipodes.

2. Bring London to the Meridian, and turn the globe till 180° pass through the Meridian, and there fix the globe; then count from the Equator southward on the Meridian 51° 32', and you will find the same dot to lie close to the Meridian (at 51° 32') below the south part of the Horizon.

P R O B. XXX.

The longest Day in any Latitude given, (supposing London, sixteen Hours and a Half) to tell in what other Latitude the longest Day is one, two, three, Sc. Hours longer than in the given Place.

Rule. Rectify the globe for the given latitude, (viz. London) and bring the folficial Colure (viz. ∞) to the Meridian; then where the Hotizon cuts the Tropic of ∞ make a dot on the Tropic at the verge of the Horizon: this done, turn the globe weftward, till γ and a half of the Equator pafs under the Meridian, and then make a fecond dot on the Tropic againft the Horizon as before; then turn the globe back to its first polition, (viz. to ∞) and then elevate the pole, till the fecond dot appears at the edge of the Horizon, and the Horizon at the fame time will cut the Meridian in the latitude required.

Proceed as above, and you will find that in the latitude 56° 20', the days are one hour longer than at London.

2. If you want to know the latitude where the day is two hours longer than at London, then proceed as before, only inite ad of caufing 7° and a half to pais under the Meridian, you mult now turn the globe till 1.5° pais under the Meridian, and make then a fecond dot on the Tropic and proceed as before.

Note, If you want to know the latitude where the longeft day is an hour fhorter than at London, only turn the globe eaftward inftead of weftward, till feven degrees and a half pais through the Meridian, and make a prick on the Tropic, and depreds the pole till this lies even with the Horizon, you will find the latitude about 45° and a half. Thus for two hours longer about 60° , for four hours about 64° 20'; but for two hours fhorter the latitude is about 35° and a half.

P R O B. XXXI.

Any Time not exceeding fix Months given, to tell that Latitude, or those Places, where the Sun will not fet for all that Time.

Note, That twenty-eight days are here reckoned to the month. Bring the given time into days, and take the half of the number of days; but remember to abate one, if the half exceeds thirty; then count from Cancer on the Ecliptic the fame number of degrees as the half amounted to, and where this reckoning ends make a dot on the Ecliptic. Laftly, Bring this dot to the Meridian, and as many degrees as are intercepted, or lie between the dot and the pole itfelf, counted on the Meridian, is the laftlude required.

Example. The place, or latitude, is demanded where the fun does not fet for the fpace of four months and fixteen days?

This is in all one hundred and twenty-eight days, the half is 64° , abate 1° is 63° ; this I count from ϖ on the Ecliptic, and make a dor, and bringing it to the Meridian, it is found there are nearly 80° between the dot and the pole, viz. the latitude is 80°, which is at Smith's Inlet, the upper part of Greenland.

So also in the latitude of 85° , he fets not for five months two weeks. And in the latitude of 86° 30, for five months three weeks and three days; and in the latitude 90°, not for fix months; as you will fee by the next Problem.

P R O B. XXXII.

To tell in the Latitude ninety (the longeft Day there being fix Months) how long it continues to be Twilight after Sun-fet, and how long their Night is after Twilight ends, before Twilight begins again.

Note, Remember you were told before, that twilight begins and ends when the fun is 18° below the Horizon, and that on September the 22d the fun begins to fet to the inhabitants at the North Pole, and to rife to the inhabitants at the South Pole; to that twilight begins September the 22d to the inhabitants at the North Pole; therefore

Rule 1. Elevate the pole to the Zenith, and turn the globe till fome degree of the fun's place in the Ecliptic lies under 180 of the Brazen Meridian, and under the fouth part of the Horizon, and you will find it 24° m, viz. November the 14th, the ending of twilight; that is, they have twilight from September the 22d, to November the 14th, and then they begin to have dark nights (fave the advantage of the Moon) till the 24th of January. For

dein is

Ifle

then

this

nes; 7th,

April e fun

grea**s**

d the fame n the

s alfo

uches in day index e 21ft

. On

ut on

e west

.

ridian,

or that

gitude.

1: and

ved that

es and a