Given two boxes containing x and 2N+1-x balls respectively. If one proceeds by repeatedly transferring half the balls from the even box to the odd box, what is the largest value of N for which the resulting sequence in one of the boxes covers all integers from 1 to 2N?

The run of a brute force R search return 2 as the solution

```
lm<-function(N)
fils=rep(0,2*N)
bol=c(1,2*N)
while(max(fils)<2){
    fils[bol[1]]=fils[bol[1]]+1
    bol=bol+ifelse(rep(!bol[1]%%2,2),-bol[1],bol[2])*c(1,-1)/2}
return(min(fils))}
```

with obvious arguments that once the sequence starts cycling all possible numbers have been visited:

```
> lm(2)
[1] 1
> lm(3)
[1] 0
```

While I cannot guess the pattern, there seems to be much larger cases when lm(N) is equal to one, as for instance 173, 174, 173, 473, 774 (and plenty in-between).