An m_{ij} **array** representation of European Dipper data for males.
Values indicate how many of the animals were *first* recaptured after release on occasion *i*.

Occ.	R(i)	j= 2	3	4	5	6	7	Total
1	12	6	1	0	0	0	0	7
2	26		11	0	0	0	0	11
3	37			17	1	0	0	18
4	39				22	0	1	23
5	45					25	0	25
6	48						28	28

E.g., m_{12} =6 and m_{13} =1 because 6 of the original 12 birds released on occasion 1, 6 were 1st seen again on occasion 2, and 1 was first seen again on occasion 3.

```
1111110   1;
1111000   1;
1100000   4;
1010000   1;
1000000   5;
```

The 6 animals from Release 1 that were first seen again on occasion 2 were re-released on occasion 2.
Thus, R_2 = 6 + 20 = 26

```
1111110   1;
1111000   1;
1100000   4;
-------------
0111100   1;
0111000   1;
0110000   7;
0100000  11;
```

Of the 26 birds released on occasion 2, 11 were 1st seen again on occasion 3, and the other 15 were never seen again.

The 1 animal from Release 1 that was 1st seen again on occasion 3 plus the 11 animals from Release 2 that were first seen again on occasion 3 were all re-released on occasion 3. Thus, R_3 = 1 + 11 + 25 = 37.

```
1010000   1;
1111110   1;
1111000   1;
-------------
0111100   1;
0111000   1;
0110000   7;
-------------
0011110   1;
0011100   4;
0011000   8;
0010110   1;
0010000  11;
```

Of those 37 birds, 17 were 1st seen again on occasion 4 and 1 was 1st seen again on occasion 5.

As stated on page 421 of your textbook, right-hand column, and shown in Equation 17.4 and Table 17.4, probability distributions for the various encounter histories that are observed can be written using the $m_{i,j}$ statistics

$$\Pr(m_{12}, m_{13}, m_{14} \mid R_1) = \frac{R_1!}{m_{12}!m_{13}!m_{14}!(R_1 - r_1)!} \times \left\{ (\varphi_1 p_2)^{m_{12}} [\varphi_1(1 - p_2) \times \varphi_2 p_3]^{m_{13}} [\varphi_1(1 - p_2)\varphi_2 \times (1 - p_3)\varphi_3 p_4]^{m_{14}} \chi_1^{(R_1 - r_1)} \right\}. \quad (17.4)$$

TABLE 17.4 Expected Numbers of Recaptures $E(m_{ij}|R_i)$ for the Data of Table 17.2 under the Cormack–Jolly–Seber Model Structure

Releases in period i	Recapture period j		
	2	3	4
R_1	$R_1\varphi_1 p_2$	$R_1\varphi_1(1 - p_2)\varphi_2 p_3$	$R_1\varphi_1(1 - p_2)\varphi_2(1 - p_3)\varphi_3 p_4$
R_2		$R_2\varphi_2 p_3$	$R_2\varphi_2(1 - p_3)\varphi_3 p_4$
R_3			$R_3\varphi_3 p_4$