```
| year | country | product    | profit |
+------+---------+------------+--------+
| 2000 | Finland | Computer   |   1500 |
| 2000 | Finland | Phone      |    100 |
| 2000 | India   | Calculator |    150 |
| 2000 | India   | Computer   |   1200 |
| 2000 | USA     | Calculator |     75 |
| 2000 | USA     | Computer   |   1500 |
| 2001 | Finland | Phone      |     10 |
| 2001 | USA     | Calculator |     50 |
| 2001 | USA     | Computer   |   2700 |
| 2001 | USA     | TV         |    250 |
+------+---------+------------+--------+
```

With `ROLLUP` added, the query produces several extra rows:

```
mysql> SELECT year, country, product, SUM(profit) AS profit
       FROM sales
       GROUP BY year, country, product WITH ROLLUP;
+------+---------+------------+--------+
| year | country | product    | profit |
+------+---------+------------+--------+
| 2000 | Finland | Computer   |   1500 |
| 2000 | Finland | Phone      |    100 |
| 2000 | Finland | NULL       |   1600 |
| 2000 | India   | Calculator |    150 |
| 2000 | India   | Computer   |   1200 |
| 2000 | India   | NULL       |   1350 |
| 2000 | USA     | Calculator |     75 |
| 2000 | USA     | Computer   |   1500 |
| 2000 | USA     | NULL       |   1575 |
| 2000 | NULL    | NULL       |   4525 |
| 2001 | Finland | Phone      |     10 |
| 2001 | Finland | NULL       |     10 |
| 2001 | USA     | Calculator |     50 |
| 2001 | USA     | Computer   |   2700 |
| 2001 | USA     | TV         |    250 |
| 2001 | USA     | NULL       |   3000 |
| 2001 | NULL    | NULL       |   3010 |
| NULL | NULL    | NULL       |   7535 |
+------+---------+------------+--------+
```

Now the output includes summary information at four levels of analysis, not just one:

- Following each set of product rows for a given year and country, an extra super-aggregate summary row appears showing the total for all products. These rows have the `product` column set to `NULL`.
- Following each set of rows for a given year, an extra super-aggregate summary row appears showing the total for all countries and products. These rows have the `country` and `products` columns set to `NULL`.
- Finally, following all other rows, an extra super-aggregate summary row appears showing the grand total for all years, countries, and products. This row has the `year`, `country`, and `products` columns set to `NULL`.

The `NULL` indicators in each super-aggregate row are produced when the row is sent to the client. The server looks at the columns named in the `GROUP BY` clause following the leftmost one that has changed value. For any column in the result set with a name that matches any of those names, its value is set to `NULL`. (If you specify grouping columns by column position, the server identifies which columns to set to `NULL` by position.)

Because the `NULL` values in the super-aggregate rows are placed into the result set at such a late stage in query processing, you can test them as `NULL` values only in the select list or `HAVING` clause. You cannot