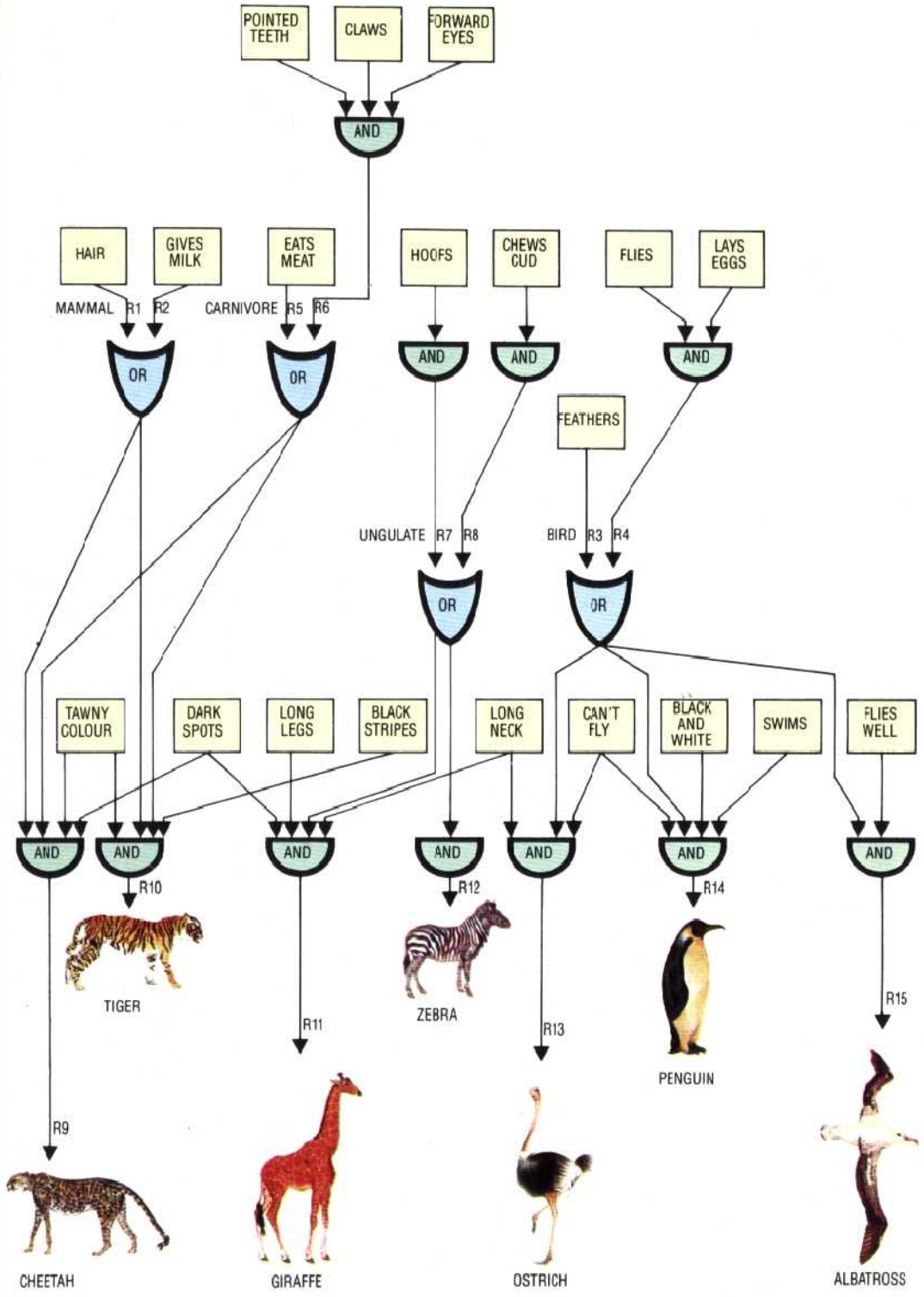
when there are 100 equally likely conclusions.

Most expert systems work by starting a dialogue between questioner and computer. The questioner has to enter details of the problem that the computer expert is to solve, and the easiest way of avoiding trouble here is to make the computer ask the user a series of multiple-choice questions. This avoids the problem of the user entering words or sentences that the computer does not understand. Then the computer tests the entered information against the rules in its store of knowledge. The route the computer takes through the rule network depends on the answers the user gives to its questions, and as the program progresses through the network each step determines the computer's next question.

The best-known expert system in Britain, the Mickie medical diagnosis program, runs on a microcomputer. And other commercial products are on the way that will turn the home machine in the living room into an expert on several subjects.

We might not be able to talk to our computers yet. But we can now ask them questions and receive answers we have reason to trust.



A Network Of Animals

This is a chart showing how the 'knowledge' of an expert system is put together as a series of simple rules. Here the rules are numbered from R1 to R15, and the purpose of the rules is to identify an animal from any information you have about it. For example, suppose you enter the information that the animal has pointed teeth. The computer starts at the box at the top left-hand side of the chart and sees where it can go in the network, aiming towards one of the animals named at the bottom. The AND in the circle means that all three of the conditions in the boxes leading to it must be true before R6 can be applied. The computer is unable to progress further until it is given further information and needs to ask two questions: does the animal have claws? and does it have eyes in the front of its head (forward eyes)? If the answer to both is yes, then R6 allows the computer to move down the chart. But R6 leads to an OR, which means that it can only move on if R6 is true or R5 is true. Here R6 is true, so the computer goes down further. Here there are two AND possibilities, each leading to different conclusions. For either R9 or R10 to apply, and give the answer CHEETAH or TIGER, the computer has to ask more questions. In this case it has to ask whether the animal has black stripes or dark spots. With this information it can then provide the answer. This type of chart is typical of the way in which the 'Animals' computer game works

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