① the man saw a strange animal on the street

input	derivation	action
the man saw	S → NP VP	exp(1)
the man saw a	S → DET N VP	exp(2)
man saw a	S → the N VP	exp(8)
saw a strange	S → the man VP	exp(12)
saw a strange	S → the man V NP	exp(5)
a strange animal...	S → the man saw NP	exp(14)
"	S → the man saw DET N	exp(2)
strange	S → the man saw a N	exp(9)
a strange	S → the man saw DET N	back(9)
"	S → the man saw NP	b(2)
"	S → the man saw DET ADJ N	exp(3)
strange	S → the man saw a ADJ N	exp(9)
animal	S → the man saw a strange N	exp(10)
on the street	S → the man saw a strange animal	exp(11)
animal	S → the man saw a strange N	b(11)
strange	S → the man saw a ADJ N	b(10)
a strange	S → the man saw DET ADJ N	b(9)
"	S → the man saw NP	b(3)
"	S → the man saw DET ADJ N PP	exp(4)

strange ---- animal on the street	S → the man saw a ADJ N PP S → the man saw a strange N PP S → the man saw a strange animal PP	exp(6) exp(10) exp(11)
"	S → the man saw a strange animal P NP	exp(7)
the street	S → the man saw a strange animal on NP	exp(15)
"	S → the man saw a strange animal on DET N	exp(2)
strut	S → the man saw a strange animal on the N	exp(8)
ϕ	S → the man saw a strange animal on the street	exp(13)

parser output: 1 2 8 12 2 14 4 9 10 11 7 15 2 8 13

(2)

stack	input	action
$	the man saw a strange ----	start
the	man saw ----	shift
DET	"	reduce (8)
DET man	saw ----	shift
DET N	"	reduce (12)
NP	"	red (2)
NP saw	a strange ----	shift
NP V	"	red (14)
NP V a	strange ----	shift
NP V DET	"	re (9)
NP V DET strange	animal ----	shift
NP V DET ADJ	"	re (10)
NP V DET ADJ animal	on the street	shift
NP V DET ADJ N	"	re (11)
NP V NP	"	re (8)
NP VP	"	re (5)
S	"	re (1)
NP VP	"	b (1)
NP V NP	"	b (5)
NP V DET ADJ N	"	b (3)
NP V DET ADJ N on	the street	shift
NP V DET ADJ N P	"	re (15)

NP V DET ADJ NP the	strict	shift
NP V DET ADJ N P DET	"	re(8)
NP V DET ADJ N P DET strict	~~Ø~~	shift
NP V DET ADJ N P DET N	Ø	re(13)
NP V DET ADJ N P NP	Ø	re(2)
NP V DET ADJ NPP	Ø	re(7)
NP V NP	Ø	re(9)
NP VP	Ø	re(5)
S	Ø	re(1)

parser output:

8 12 2 14 9 10 11 15 8 13 2 7 9 5 1

③

<ROOT, ROOT, saw>
<saw, SUBJ, Anna>
<saw, MOD, today>
<saw, OBJ, animal>
<animal, DET, a>
<animal, NMOD, strange>