

Midwest Technology Assistance Center  
Groundwater Resource Assessment for Small Communities

**Groundwater Availability**  
**At**  
**Tower Hill**  
(Shelby County)

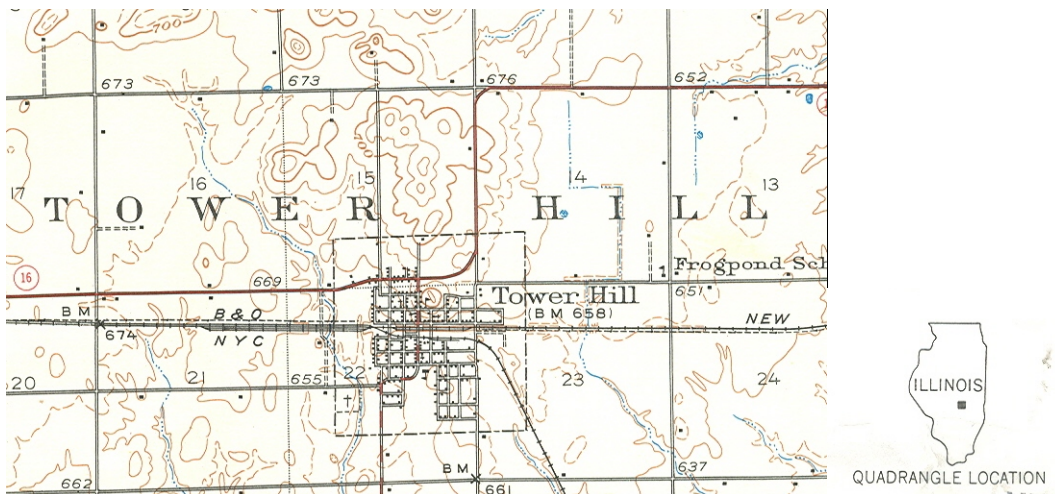
**Project Overview**

This project is an outgrowth of the Public Service Program of the Center for Groundwater Science (CGS) at the Illinois State Water Survey. For over 50 years, the CGS has provided groundwater information to any requesting individual, commercial facility or public water facility. Groundwater resource assessments have been an integral part of this public service and have been undertaken for thousands of individuals and facilities throughout its history. Community groundwater supplies that have been identified as potentially “deficient” are the targets for this project. The criterion used for determining community deficiency were; 1) Water Supply and Demand (operating time), 2) Aquifer Limitation, 3) Well Specific Capacity, and 4) Facility History. The Village of Tower Hill has been identified as a target community for groundwater assessment through this project.

**Project Goal**

To provide a resource tool of pertinent groundwater information to each target facility. This document describes a summary of historic information, current conditions and the potential for expansion of the water supply of Tower Hill.

**Tower Hill (Shelby County)**



The Village of Tower Hill (Facility Number 1730500) utilizes two active community water supply wells. Well Nos. 4, also known as the North well, (Illinois EPA No. 45184) and 5, also known as the South well (Illinois EPA No. 45185) distribute 37,500 gallons per day to 265 service connections which serve an estimated population of 650.

Tower Hill was determined to be “Adequate” by the project criteria and this report serves as a summary of information should they need to increase their current supply. The shallow depth of Wells No. 4 and No. 5 (both 48 feet) included this facility within the study.

**Historic Information**

Background Well Information

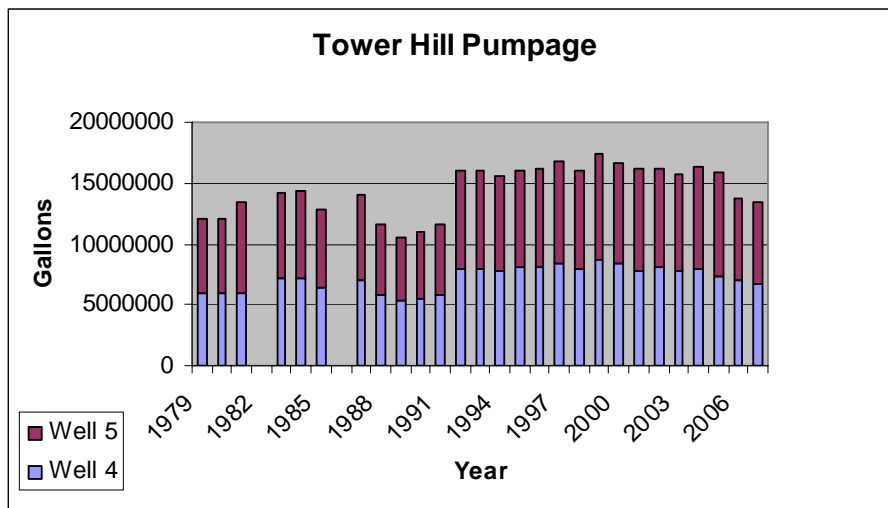
Well No. 4 (Locally North Well)

Constructed within sand and gravel in 1972 to a depth of 48 feet, the well is located in Section 20, T.11N., R.3E., Shelby County. A drawdown of 14.34 feet was reported while pumping at a rate of 107 gpm for 2.5 hours. The nonpumping water level was 9.58 feet and the calculated specific capacity was 7.46 gpm/ft., upon construction.

Well No. 5 (Locally South Well)

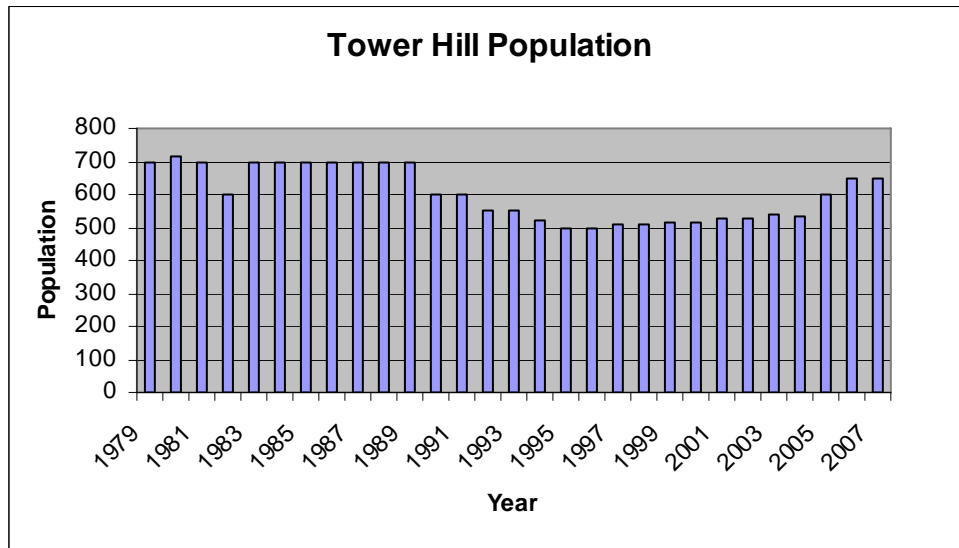
Constructed within sand and gravel in 1972 to a depth of 48 feet, the well is located in Section 20, T.11N., R.3E., Shelby County. A drawdown of 11.46 feet was reported while pumping at a rate of 107 gpm for 3 hours. The nonpumping water level was 7.83 feet and the calculated specific capacity was 9.34 gpm/ft., upon construction.

Background Pumpage Information



Source: ISWS Illinois Water Inventory Program

## Historic Population Information



Source: ISWS Illinois Water Inventory Program

## **Regional Information**

### Resources within the Tower Hill area

#### *Domestic Groundwater Supplies*

The available regional data indicate that groundwater for domestic and farm use in this part of Illinois is obtained from mainly large-diameter bored and drilled wells, typically 20 to 40 feet deep. These wells tap both unconsolidated (sand and gravel or till) and consolidated (sandstone or shale) material. The wells are reported as low-yielding but sufficient for domestic home supplies.

#### *Municipal Groundwater Supplies*

There are no towns within the local area of Tower Hill that use groundwater as their source.

Figures 1 and 2 picture the ISWS Potential Yield maps for sand and gravel and bedrock aquifers in Illinois, respectively. The pertinent counties for Tower Hill are highlighted. Figure 1 indicates that sand and gravel deposits are limited within the local Tower Hill area. The bedrock map (Figure 2) indicates that bedrock deposits suitable for development are very limited throughout the Tower Hill area. Figures 3 and 4 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Tower Hill area as depicted in the Illinois State Geologic Survey Circular 225, *Groundwater Geology in South-Central Illinois* (Selkregg, et al., 1957). Figure 3 indicates "Fair to Good," possibilities for the occurrence of water-bearing sand and gravel deposits locally. Figure 4 indicates low-yielding shales and sandstone units directly

beneath the drift and only small supplies are generally available from these shallow bedrock units. The domestic well construction records verify these map outlooks.

### **Groundwater Availability Summary**

The available information indicates that, although the sand and gravel deposits the village currently uses are local and variable, they are capable of providing for the village with their water needs now and into the future. Should Tower Hill need to expand and the town elects to drill another well, exploration of the same general area is recommended, however, care should be taken in properly spacing any new well away from the current wells to ensure drawdown interference is minimal. Several communities within this area have also constructed wells within the floodplain of the Kaskaskia River to the south and east of Tower Hill. This can also be considered for expansion if necessary, however, test drilling and well testing would be required.

### **References**

Selkregg, L.F., W.A. Pryor, and J.P. Kempton. 1957.  
Groundwater Geology in South-Central Illinois. A Preliminary Geologic Report. Illinois State Geological Survey Circular 225.

## Estimated Potential Yields of Sand and Gravel Aquifers in Tower Hill Area

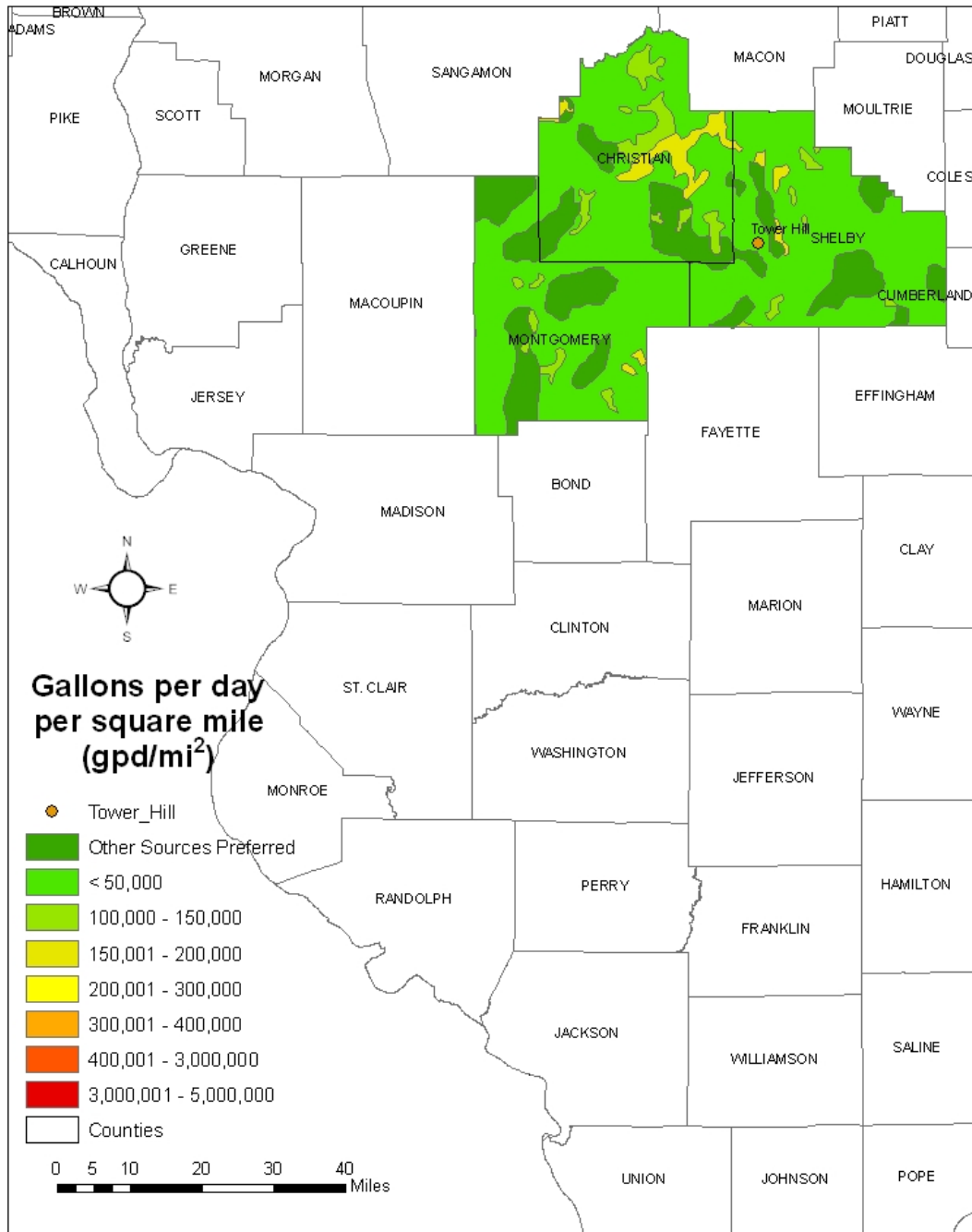


Figure 1.

## Estimated Potential Yields of Shallow Bedrock Aquifers in Tower Hill Area

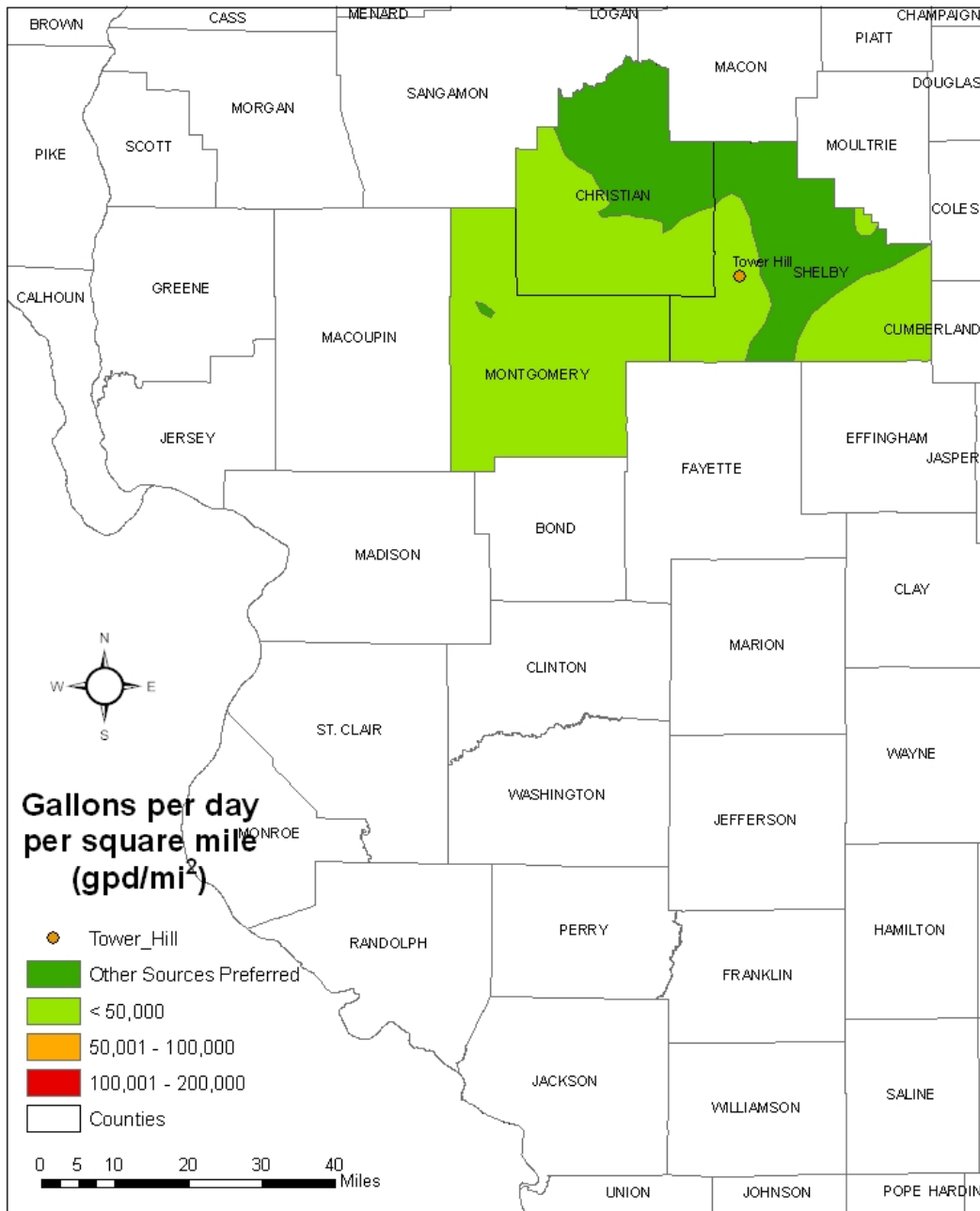


Figure 2.

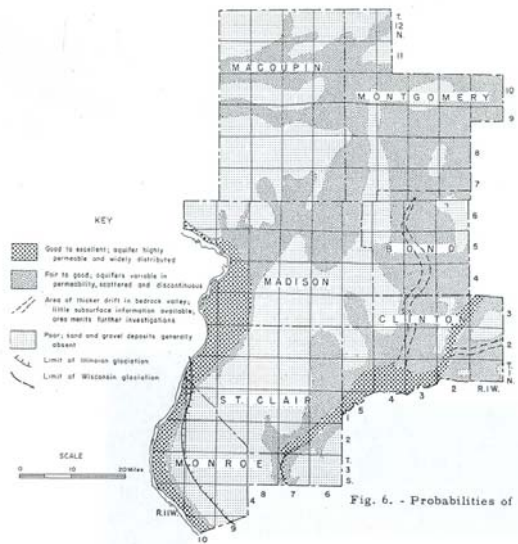
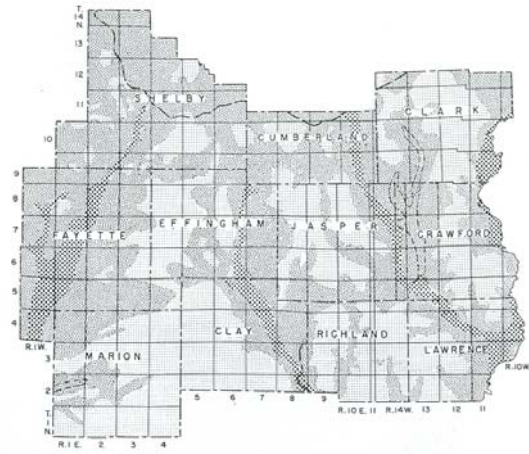


Fig. 6. - Probabilities of



occurrence of sand and gravel aquifers.

Figure 3.

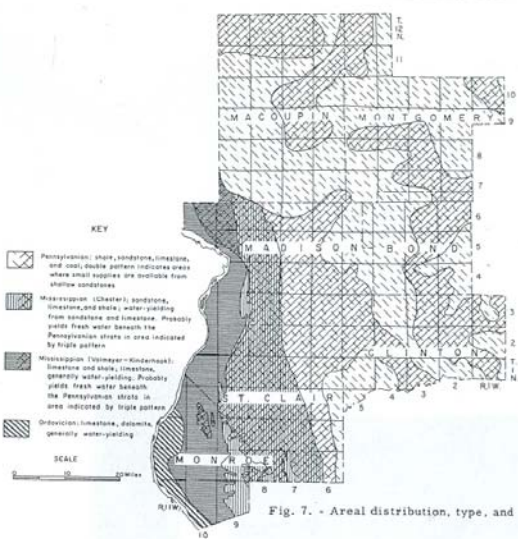
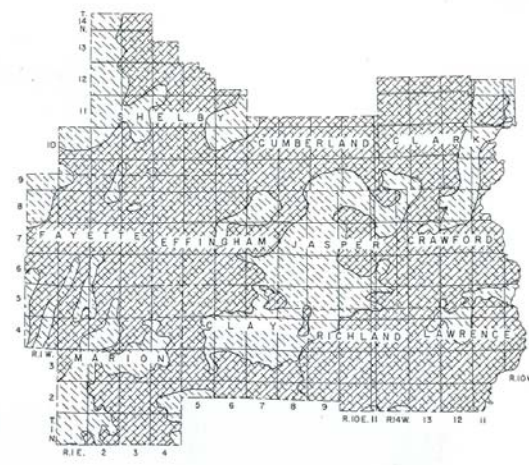


Fig. 7. - Areal distribution, type, and



water-yielding character of upper bedrock formations.

Figure 4.

## ISWS publications list for Tower Hill and surrounding areas.

\* = Publication is out of print.

\$ = Payment required.

### CHRISTIAN

- \*1961 RI-41 Ground-water development in three areas of central Illinois. Walker-Walton. 43p.
- \*1961 RS-17 Evaluating wells and aquifers by analytical methods. Walton-Walker.
- \*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky- Schicht. 52p.
- \*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann- Kim-Ringler. 193p.
- 1981 COOP-6 Assessment of a regional aquifer in central Illinois. Burris-Morse-Naymik. 77p.
- \*1981 COOP-7 Procedures for the collection of representative water quality data from monitoring wells. Gibb-Schuller-Griffin. 66p.
- \*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.

### MONTGOMERY

- \*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
- \*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.
- 1981 COOP-6 Assessment of a regional aquifer in central Illinois. Burris-Morse-Naymik. 77p.
- \*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.



## SHELBY

- \*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- 1967 C-92 Groundwater availability in Shelby County, Illinois. Sanderson. 37p.
- 1997 CR611 Delineation of Time-Related Recharge Areas for the City of Shelbyville Well Fields. Anliker-Roadcap. 69p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
- \*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.
- 1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.
- \*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.
- 1997 CR-611 Delineation of time-related recharge areas for the city of Shelbyville well fields. Anliker-Roadcap. 69p.